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RANDOM NOTES ON PACIFIC COAST GULLS.

BY A. W. ANTHONY.

FROM the ice fields on the north, with the Sabine Gull and Red-legged Kittiwake hovering over the open leads in the pack, to the coast of Mexico, with Heermann's Gull as an ever present feature of the sand beaches, no part of our Pacific coast but can offer gulls in abundance. As yet undisturbed to any extent by the feather hunters, they fairly swarm about the bays and beaches during the winter months, and are but little less noticeable in summer when the nesting birds have retired to the outlying islands, or followed the flocks of geese and cranes to the far north.

No family presents a more interesting study, none are more dainty in plumage, but for some reason there still remains a great deal to be published regarding the life histories of this group. As a rule the species are not easy of identification, even with the bird in hand, a difficulty still further increased when the tyro attempts to segregate the species in a passing flock, presenting different plumages as well as half a dozen or more species of similar size and general appearance. Once having mastered the few difficulties of identification one detects certain characteristics of manner that render most of the species separable with reasonable certainty, even before the markings and other specific characters can be discerned.

In nearly all of the species that have passed under my observation most of these characteristics are of so subtle a nature that I find it well-nigh impossible to define them to my own satisfaction, much less to describe them.

To a casual observer who has seen the gulls of Puget Sound ports contesting with Siwash Indians for garbage, or whose observations have been limited to the gulls that follow the coasting steamers from port to port to feed on the refuse thrown from the galley, the mention of a sea gull suggests nothing so much as a scavenger, on a par with Turkey Vultures and Crows. The other side of the ledger presents a different appearance, for, removed from the degrading influence of garbage dumps, which few if any of our Pacific species seem able to resist, our sea gulls are as dainty and charming in habit and manner as one could wish. *Larus* is, however, an inveterate scavenger, and when found in the region of coast ports can be looked for with certainty about the garbage dumps. I have seen on Puget Sound hundreds of gulls congregated on the dumping grounds, competing with a dozen or more Indians for desirable spoil; the Indians, silent and deliberate, the gulls, clamorous and precipitate, dashing down for choice edibles under the very hands of their human competitors. These conventions were in the winter months and consisted chiefly of Pacific Kittiwake, Glaucous-winged, American Herring, Short-billed, and Bonaparte's, with now and then a Western Gull. They were all equally fearless, and a dozen might have been reached with a stick seven or eight feet long. I doubt, however, that any could have been killed with a stick, for, confiding as they seem, a hostile movement is instantly noted and every gull in the flock as quickly warned. These same birds would be difficult to stalk half a mile from the wharves and shipping; they are quick to learn the limits of protection and by no means averse to accepting the advantages afforded by strict harbor regulations. It is well known that should a gull be shot, whether killed or merely disabled, every gull within sight and hearing will hasten to the spot, and with cries of alarm hover for several minutes over a fallen comrade, nor will they seek safer quarters before a number have been shot. It is a common practice of a certain class of Sunday sportsmen (?) to take advantage of this sympathetic trait, and slaughter wantonly large numbers for the mere sport.

During the winter months companies of from a dozen to forty gulls are in constant attendance on the coasting steamers from Mexico to Puget Sound. These flocks are composed of Western,

Glaucous-winged, Herring, Ring-billed, and Short-billed Gulls. At times the Bonaparte's will join the flock, but not often, as this species seems to prefer the regions of the quiet bays or kelp beds along shore. Along the southern coast Heermann's Gull will be much in evidence, with its slaty plumage and pure white head contrasting strangely with the other species. That some, at least, of these birds follow the vessel for days I have no doubt, for on one occasion I remarked a Glaucous-winged Gull on leaving San Diego. A broken primary hanging from one wing made identification reasonably sure, and for three days the bird was never more than a few hundred yards from the steamer. I lost sight of him at the entrance of San Francisco Bay, and would have been by no means surprised to have found him in the wake of the next steamer bound south. During the summer months there are not so many gulls following the steamers, and those seen are, for the most part, birds of the preceding year. Adults are picked up as the vessel passes the breeding islands but are soon lost again. In sailing off shore also one soon loses the gulls; the large flock picked up at the harbor bar soon begins to drop off, the Ring-bill and other smaller species being the first to leave and the Glaucous-winged and Herring turning back some twenty-five miles at sea, perhaps about the time the saber-like wings of the Black-footed or Short-tailed Albatross are seen on the horizon. I have once or twice picked up a lone Sabine's gull three or four hundred miles off shore, but the vessel offered but a momentary attraction, for after one or two tacks across the wake, as if to read the name and hailing port on the counter, the independent rover was gone.

These same remarks might apply equally to a number of Parasitic Jaegers I have seen after reaching deep water, and the one or two specimens that I secured thus far from shore somewhat upset my previous idea that the bird is entirely parasitic, depending on the gulls and terns for its food; for these deep sea individuals had their stomachs filled to overflowing with fish spawn about the size of No. 5 shot, evidently that of some species spawning on the surface where the bird could pick it up without trouble. I have seen this jaeger in Bering Straits diving for surf smelt, together with Pacific Kittiwakes, but like all of this group, they found it difficult to get below the surface, even with the help of a drop of six or eight feet above

the water, and seldom neglected an opportunity to rob the Arctic Tern or Kittiwake.

In flight all of the species of gulls with which I am familiar habitually carry the feet and tarsi extended behind and closely held along the under surface of the tail-coverts; the feet closed so that the toes and tarsus present an appearance of uniform size throughout the length. The cold winds of winter, however, are apt to be felt by bare feet, and when this happens *Larus* is equal to the occasion; one foot is brought up under the body and the feathers on one side of the belly vigorously kicked forward, the foot and tarsus tucked away out of sight and the feathers allowed to fall back into place. This operation consumes three or four seconds, and it is not until the first foot is snugly tucked away that the other is brought forward to undergo the same process. I have repeatedly witnessed this act during cold winds, and often the gull was but a few feet from me, but so neatly are the feet covered that I could never detect the slightest disarrangement of the plumage or other indication of the hidden members after the feathers had resumed their normal position.

Another feat that I have often witnessed, and as often marveled at, is the ease and grace with which a gull will scratch its head with its foot, or even dislodge a parasite from under its wing with its bill without in any way disturbing its flight. The scratching, which is a very common habit, is accomplished by reaching well back under the wing with the head and forward with the foot, while the wings are held in the normal position and the bird sails.

During the summer months, when herring are running along the coast of southern and Lower California, their migrations are accompanied by every sea bird of the region. In the neighborhood of large schools will be found hundreds of Brandt's and Farralone Cormorants, California Brown Pelicans, Western and Heermann's Gulls, as well as several species of terns and shearwaters, that may be found at that season. It is only when the fish are driven to the surface, by predaceous fish from below or by the cormorants and shearwaters — the only birds above mentioned that seek their food by diving — that the gulls can in any way secure them, and even then they would stand but a small chance were it not for the crowded masses that are at such times driven fairly out of the water. The

Heermann's Gull is by far the most active and successful in catching small fish from the surface, but as a rule will seldom attempt to catch his own dinner if there are any pelicans among the delegates to the convention. There are times when the herring are so thick and so driven from below by the large fish that the pelicans will sit on the surface and snap them up without plunging, as is their normal method, from a height of from ten to thirty feet in the air. If the fish are swimming the deep plunge often carries the bird completely under the surface, and when a second later he bobs up like a cork, he is sure of finding at least one, often two Heermann's Gulls expectantly awaiting the result. If there are two they will usually take up stations on each side and but a foot in front of the pelican, which still holds its huge bill and pouch under the water. It may be that the pelican does not yet know the result of his efforts, for in plunging the pouch it used as a dip net and, if nothing else, it is full of water, which is allowed to escape past the loosely closed mandibles until, perhaps five or ten seconds after the bird made his plunge, a flutter is seen in the pouch, announcing one or more struggling victims. It is still an open question, however, whether they will be eaten by the gull or the pelican, and the latter is seemingly well aware that a herring in the gullet is worth two in the pouch, for it will often wait several seconds for a favorable opportunity for disposing of the catch; the gulls meantime constantly uttering their nasal whining note and keeping well within reaching distance of the pouch. When the critical moment arrives the pelican throws the bill up and attempts to swallow the fish but, with cat-like quickness, one or both gulls make a similar effort, and should the fish in its struggles have thrust its tail or head past the edges of the mandibles, as very often happens, it is an even chance that the gull gets the prize; in fact, I have often seen a Heermann Gull reach well into the pouch and get away with a fish in the very act of slipping down the throat of the pelican. I remember a very amusing incident of this nature I once witnessed on the coast of Lower California. The pelican, after securing a herring, 'backed water' until it was supposed to be far enough from its parasite to venture swallowing it, but as the huge bill was tipped up and opened the gull plunged forward and thrust its entire head and neck into the pouch; the pelican, somewhat quicker than most of its kind,

closed down with a snap and caught the intruder, which in turn had caught the fish; neither would yield any advantages gained, and for perhaps half a minute the pelican towed the gull about by the head, amid most violent protest from a hundred or more gulls assembled, while other pelicans sat like solemn judges, perhaps offering to arbitrate the question. At last a more violent twist than usual on the part of the gull freed him from limbo, minus a few feathers, but in no manner daunted, for a moment later it was following closely in the wake of the same pelican, waiting for it to plunge for another fish, and I never did learn which really swallowed the one in controversy. There would seem to be a certain amount of proprietorship exercised on the part of the gulls over the pelican selected, for they will follow for hours the same bird, and though a hundred or more may be fishing in the same flock they will each be in a great measure attended by one or two, seldom more, gulls, and little attempt is made to leave one pelican in favor of another; such abandoned birds are usually those that have become satisfied and are no longer fishing. I have on several occasions seen large flocks of pelicans fishing at night and the whining cat-like cry of the Heermann's Gull proved that it was, as always, on hand to get his share. The Western Gull will sometimes attempt to emulate the Heermann's, but his greater bulk renders him comparatively harmless to the pelican.

When herring are swimming in compact schools near the surface both Heermann's and Western Gulls secure them by approaching the school from behind and flying near the surface of the water, making repeated, quick dips into the school. The fish seek safety in the depths the instant anything occurs to alarm them, but soon return to the surface, so that the gulls by stalking them from the rear are enabled to approach quite near before the fish are alarmed. As soon as the limits of the school has been passed the gull, rising higher in the air, returns by a wide circuit and again passes over the school from the rear. As the fish all swim in one direction, in a compact mass, these tactics afford the gulls a decided advantage, which seems to be thoroughly understood. I think that the Heermann's Gull secures about one out of five fish that are snapped at and the Western half as many. Royal Terns and the other gulls employ these same methods but to a less extent.

I have often seen gulls of different species on finding a clam on the beach, which was not to be opened by vigorous hammering, carry the bivalve up twenty-five or thirty feet and let it drop. Evidently the bird had the principle but lacked application, for the clam was as often dropped on a soft sand beach as otherwise, and after repeated attempts the gull seemed unable to understand why the shell was not broken. Possibly a few yards distant a rocky beach would have furnished all that was necessary to make the effort successful. On the other hand, I have seen a gull seemingly reason out a more difficult problem, more difficult because not such as would often confront a gull in a state of nature.

I was one day watching some Western Gulls, a few yards from me on a wharf, when a large piece of salted fish was thrown out from an adjacent boat house. It fairly glistened with a thick incrustation of salt, and I was somewhat curious to see if the gulls would eat food so highly seasoned. No sooner had it fallen than it was siezed upon by a gull and as quickly swallowed; but from the surprised actions of the bird it was evidently not to his liking; no sooner had it reached the stomach than it was ordered out again. Dropping the fish on the wharf, the bird eyed it for a moment, turning its head from side to side, and, to judge from its soliloquy, made a number of uncomplimentary remarks on the depraved tastes of mankind that would spoil good fish in that manner. Then picking up the fish it flew down to the water and holding it under the surface shook its head from side to side violently 'sozzeling' the meat about for several seconds. It was then taken back to the wharf, laid down and inspected, and carefully sampled; this time, however, it was not bolted as at first but held for a moment in the mouth and again rejected, and carried back to the water where it was even more roughly laundered. This operation was repeated several times and the piece of fish, which must have weighed four ounces at the outset, was reduced to half that size before it reached a state of freshness that suited the palate of the gull.

During the nesting season the gulls of our Pacific coast play sad havoc with the eggs and young of nearly all of the species of sea birds that nest in exposed situations; nor are the auks and petrels in their burrows immune, for I have seen a Western Gull pull a Cassin's Auklet from a somewhat more shallow burrow than usual

and swallow it with the same gusto and apparent relish with which it bolted the egg a moment later.

It is among the cormorants, however, that the greatest slaughter takes place, and not only are the eggs eaten, but the young are well grown before it is safe for the parents to leave them to brave the *bête noire* of cormorantdom — *Larus*. The advent of man in the region of a cormorant rookery is hailed with delight by every gull on the island but to the poor cormorant it is a calamity of the darkest hue. As the frightened birds leave the nests, which have so far never been for a moment left without the protection of at least one of the parents, the screaming gulls descend in swarms to break and eat the eggs or kill the young, as the case may be. Small cormorants are bolted entire despite their somewhat half-hearted protest; larger birds are dismembered by two gulls assisting in the operation, after the well known manner of barnyard chicks with a worm, and before the adult cormorants have recovered from their fright and returned to protect their homes a colony of several hundred nests will be almost destroyed. I have found young Western Gulls feasting on cormorant squabs half a mile or more from the nests from which they had been abducted.

That gulls drink sea water and can thrive on it, is a fact not to be questioned, but I am of the opinion that when fresh water can be obtained without too much trouble they will drink it in preference. Several years ago I camped for a few days on the beach near a small fresh-water pond; during my stay sea gulls were constantly flying in from sea to drink, bathe, and preen their feathers. Many single birds were noted flying from as far out as the eye could reach direct to the pond; after a few moments of rest and a drink, they returned to the sea in a manner that very plainly indicated that they had business there and had happened in merely to get a little fresh water. It is true, that at this time, the wind was kicking up moderate sea, and while I have seen gulls resting on the waves when they were worse, they do not enjoy rough water, and may have been influenced by the weather conditions more than I supposed.

While the sea gull may have spent the day clam hunting on the mainland beaches, as soon as night falls instinct prompts it to seek an island on which to spend the night. In calm weather the dense kelp beds along the coast of southern California and Lower

California furnish roosting places for numbers of gulls, terns and cormorants, as well as a few herons and shore birds, but the large majority will, if an island is within thirty miles, wing their way to its shelter. Many of their most favored roosting places are but little if any used as nesting grounds.

Some of these winter resorts that I have visited on the coast of Lower California are deserving of more than passing notice. San Geronimo and Nativadad Islands are typical of this class. Both are rather low, sandy islands, almost entirely devoid of vegetation of any kind. A person nearing these islands in the afternoon will notice, while still thirty miles or more distant, long, straggling flocks of cormorants, loose, scattered companies of gulls, and small military squads of California Brown Pelicans, all converging toward one point. As the island grows larger and the sun sinks lower birds become more and more plenty, flocks hurry by with greater frequency and with an air of business that has not marked their actions earlier in the day.

The first cormorants will arrive at the island as early as four o'clock, and taking up their station well back from the beach will be joined by the next flock. The black patch on the gray sand extends its outposts until it meets the brown borders of the pelican colony on the one side, and the snowy expanse of gulls on the other, completely surrounding them and forcing later arrivals of gulls and pelicans to start other camp grounds further along. These again are overtaken and surrounded until by dusk the entire side of the island will be one solid mass of closely packed birds, the white of the gulls and brown plumages of the pelicans standing out in striking contrast to the inky blackness of the cormorants which form over three quarters of the mass. The species all flock separately so far as is possible, and the result is a patchwork of white and gray separated by broad zones of black; even the Brandt's and Farralone Cormorants roost apart, with the somewhat rare Baird's Cormorant still further removed, perching on the low cliffs and rocks along the beach. Stragglers arrive until late in the night; the gulls, in fact, do not all get home until the first of the early risers begin to leave at daybreak. The departure is even more gradual if possible than the arrival of the night before, and it is not until the sun is two hours high that the last of the cormorants leave for the fishing grounds.

A LIST OF THE BIRDS OF TACOMA, WASHINGTON, AND VICINITY.

BY J. H. BOWLES.

THE city of Tacoma is situated upon Puget Sound at the southern extremity of Admiralty Inlet. The land bordering upon the city is somewhat varied in its physical construction, which must account for the local restriction of several species. It may perhaps be best described as an extensive prairie, in many parts densely wooded, and split open at intervals by deep, heavily wooded gulches. At the bottom of these gulches run small fresh water brooks, bordered by a dense growth of nettles and viciously spined devils-club. The maximum altitude is only 410 feet, and there is no appreciable rise in elevation for fifty or more miles on any side until the foothills of the Cascade Mountains are reached.

The section to be treated is bounded on the east by Admiralty Inlet and the Puyallup River, a glacial stream running through a rich valley, on the north and west by Puget Sound, and on the south by numerous small lakes, streams and marshes of fresh water. Extensive tide-flats, with their surrounding marshes, form attractive feeding grounds for the Limicolæ.

The timber consists largely of the Douglas fir, which grows to a height of 250 feet and more, and is found everywhere. Cedar and spruce are also well represented. In the vicinity of water are to be found the cottonwood, maple, alder, and other deciduous trees and shrubs, while numerous parts of the dryest prairie are plentifully dotted with oak.

The temperature is moderate throughout the year, seldom reaching much below the freezing point in winter, and averaging about 65° during the summer. This will probably account for many of the winter residents, as well as for some of the mountain-loving summer residents.

The following list is the result of personal observations of the author during a period of nine years. Several most interesting species, such as the California Clapper Rail (*Rallus obsoletus*), have been shot and accurately described by friends, but have been

omitted because they were not actually under the eye of the writer.

In the identification of many species the author desires to acknowledge the kindness of Dr. A. K. Fisher and Mr. H. C. Oberholser of the Biological Survey, U. S. Dept. of Agriculture.

1. **Æchmophorus occidentalis.** WESTERN GREBE.— Very common migrant and winter resident. Flocks of hundreds assemble in October to fish in the tide-rips.

2. **Colymbus holbœlli.** HOLBŒLL'S GREBE.— Common in migrations and winter, but not so numerous as the above.

3. **Colymbus auritus.** HORNED GREBE.— Common during migrations and in winter.

4. **Podilymbus podiceps.** PIED-BILLED GREBE.— Common summer resident. Rare in winter. Breeds.

5. **Gavia imber.** LOON.— Not uncommon summer resident in the higher altitudes. Breeds.

6. **Gavia lumme.** RED-THROATED LOON.— Not uncommon in winter.

7. **Ceratorhina monocerata.** RHINOCEROS AUKLET.— Rare visitor. Shot on Sept. 21, 1902.

8. **Brachyramphus marmoratus.** MARBLED MURRELET.— Common throughout the year on the Sound. Undoubtedly breeds.

9. **Cepphus columba.** PIGEON GUILLEMOT.— Common throughout the year. These birds dig deep holes in the face of a sandy cliff, laying their eggs on the bare sand at the end.

10. **Uria troile californica.** CALIFORNIA MURRE.— Not rare during migrations along the Sound.

11. **Stercorarius parasiticus.** PARASITIC JAEGER.— Not uncommon during migrations along the Sound.

12. **Larus glaucescens.** GLAUCOUS-WINGED GULL.— Very common from October to May. A few spend the summer, but I have seen no indications of their nesting.

13. **Larus occidentalis.** WESTERN GULL.— Common during the winter.

14. **Larus californicus.** CALIFORNIA GULL.— Common during migrations.

15. **Larus brachyrhynchus.** SHORT-BILLED GULL.— Common in winter.

16. **Larus heermanni.** HEERMANN'S GULL.— Rather common in summer and fall though we have seen no signs of nesting.

17. **Larus philadelphia.** BONAPARTE'S GULL.— Very common spring and fall migrant. In the fall we have seen large numbers, in company with Nighthawks, catching insects on the wing over land where the timber had been cut off. An examination of several stomachs showed them to be crammed with insects only.

18. **Phalacrocorax penicillatus.** BRANDT'S CORMORANT.— Common during migrations and in winter.

18*a*. **Phalacrocorax dilophus cincinatus.** WHITE-CRESTED CORMORANT.— Probably not an uncommon visitor on Puget Sound. Two were seen near Tacoma on Feb. 9, 1906.

19. **Pelecanus erythrorhynchos.** AMERICAN WHITE PELICAN.—Very rare migrant.

20. **Merganser americanus.** AMERICAN MERGANSER.— Common in spring, fall and winter. A few pairs remain to breed.

21. **Merganser serrator.** RED-BREASTED MERGANSER.— Common migrant.

22. **Lophodytes cucullatus.** HOODED MERGANSER.— Moderately common, except in winter. Breeds.

23. **Anas boschas.** MALLARD.— Common resident. Breeds.

24. **Chaulelasmus streperus.** GADWALL.— Rare migrant.

25. **Mareca americana.** BALDPATE.— Very common, except in summer when it leaves.

26. **Nettion carolinensis.** GREEN-WINGED TEAL.— Very common except in summer when it leaves.

27. **Querquedula discors.** BLUE-WINGED TEAL.— Very rare migrant. A pair seen May 28, 1905.

28. **Spatula clypeata.** SHOVELLER.— Common, excepting in summer when it leaves.

29. **Dafila acuta.** PINTAIL.— Common from October to May, when it leaves.

30. **Aix sponsa.** WOOD DUCK.— Rather rare summer resident. Breeds.

31. **Aythya americana.** REDHEAD.— Rare migrant, keeping to the fresh water.

32. **Aythya vallisneria.** CANVAS-BACK.— Moderately common in winter and spring.

33. **Aythya marila.** AMERICAN SCAUP DUCK.— Common from November to May, when it leaves.

34. **Aythya affinis.** LESSER SCAUP DUCK.— Not so common as *A. marila*, but seen at the same seasons.

35. **Aythya collaris.** RING-NECKED DUCK.— Rather rare migrant.

36. **Clangula clangula americana.** AMERICANA GOLDEN-EYE.—Common from November until May.

37. **Charitonetta albeola.** BUFFLE-HEAD.— Common from November until May, when it leaves.

38. **Harelda hyemalis.** OLD-SQUAW.— Moderately common in spring only.

39. **Histrionicus histrionicus.** HARLEQUIN DUCK.— Rather rare, but regular migrant.

39*a*. **Somateria v-nigra.** PACIFIC EIDER.— A flock of seven, and two other females, were seen on Jan. 6, 1906. They were very wild, and none was taken, but the two females were approached to within eighty yards as they were feeding in a muddy slough.

40. **Oidema americana.** AMERICAN SCOTER.— Rather rare migrant.

41. **Oidemia deglandi.** WHITE-WINGED SCOTER.— Very common, except in summer when only a few remain.

42. **Oidemia perspicillata.** SURF SCOTER.— Common from October to May, when it leaves.

43. **Anser albifrons gambeli.** AMERICAN WHITE-FRONTED GOOSE.— Fairly common migrant.

44. **Branta canadensis hutchinsii.** HUTCHIN'S GOOSE.— Common migrant.

45. **Branta canadensis occidentalis.** WHITE-CHEEKED GOOSE.— Common migrant.

46. **Branta nigricans.** BLACK BRANT.— Regular, though not common in migrations along the Sound.

47. **Olor columbianus.** TRUMPETER SWAN.— Rather rare, but regular migrant.

48. **Botaurus lentiginosus.** AMERICAN BITTERN.— Rare, but regular migrant.

49. **Ardea herodias fannini.** NORTHWEST COAST HERON.— Common resident. Breeds.

50. **Grus mexicana.** SANDHILL CRANE.— Rather common migrant.

51. **Rallus virginianus.** VIRGINIA RAIL.— Common summer resident. Breeds.

52. **Porzana carolina.** CAROLINA RAIL; SORA.— Summer resident and breeds, but not so common as *R. virginianus*.

53. **Porzana jamaicensis.** BLACK RAIL.— Very rare migrant. Saw two on Nov. 10, 1900.

54. **Fulica americana.** AMERICAN COOT.— Common resident. Breeds.

55. **Phalaropus lobatus.** NORTHERN PHALAROPE.— Common fall migrant, but have never seen it in the spring.

56. **Gallinago delicata.** WILSON'S SNIPE.— Common migrant, a few spending the winter. Possibly breeds.

57. **Macrorhamphus scolopaceus.** LONG-BILLED DOWITCHER.— Rather common migrant.

58. **Tringa canutus.** KNOT.— Rare migrant. One shot in Sept., 1897.

59. **Actodromas maculata.** PECTORAL SANDPIPER.— A regular but not at all common migrant.

60. **Actodromas minutilla.** LEAST SANDPIPER.— Common migrant.

61. **Pelidna alpina sakhalina.** RED-BACKED SANDPIPER.— Common during migrations and in winter.

62. **Ereunetes occidentalis.** WESTERN SANDPIPER.— Very common migrant.

63. **Totanus melanoleucus.** GREATER YELLOW-LEGS.— Regular migrant, though not common.

64. **Actitis macularia.** SPOTTED SANDPIPER.— Rather common except in winter. Nests on every stream in the mountains.

65. **Numenius hudsonicus.** HUDSONIAN CURLEW.— Very common spring migrant, but never seen in the fall.

66. **Squatarola squatarola.** BLACK-BELLIED PLOVER.— Rather common during migrations. Have shot them on the tide-flats and open prairies.

67. **Oxyechus vociferus.** KILLDEER.—Common summer resident, but scarcer in winter. Breeds.

68. **Ægialitis semipalmata.** SEMIPALMATED PLOVER.—Rather rare migrant.

69. **Colinus virginianus.** BOB-WHITE.— An introduced species. Resident and rapidly increasing. Breeds.

70. **Oreortyx pictus.** MOUNTAIN PARTRIDGE.— An introduced species. Common resident and breeds. Specimens are found that grade into almost typical *O. p. plumiferus.*

71. **Lophortyx californica.** CALIFORNIA PARTRIDGE.— An introduced species and breeds. Common resident. Specimens have been taken that grade into almost typical *L. c. vallicola.*

In connection with Nos. 70 and 71, in both it seems probable that birds were introduced here from different localities in California and that the closely allied forms have interbred.

72. **Dendragapus obscurus fuliginosus.** SOOTY GROUSE.— Common resident and breeds. In December and January these birds confine themselves to the tops of tall firs, feeding on the buds.

73. **Bonasa umbellus sabini.** OREGON RUFFED GROUSE.— Common resident. Breeds, laying larger eggs than *B. umbellus* of the east.

74. **Phasianus** . MONGOLIAN PHEASANT.— This introduced species is becoming fairly common in some sections, but its size and brilliant coloring is fatal to it with the pot-hunters. Breeds.

75. **Columba fasciata.** BAND-TAILED PIGEON.— A rather rare resident, though formerly common. Breeds.

76. **Zenaidura macroura.** MOURNING DOVE.— Very rare visitor during the summer. Saw one on June 14, 1905.

77. **Cathartes aura.** TURKEY VULTURE.— Not uncommon summer resident. Breeds.

78. **Circus hudsonius.** MARSH HAWK.— Not uncommon during migrations.

79. **Accipiter velox.** SHARP-SHINNED HAWK.— Not uncommon during migrations.

80. **Accipiter cooperii.** COOPER'S HAWK.— Rare summer resident. Breeds. Nest with five fresh eggs found May 20, 1905.

81. **Accipiter atricapillus striatulus.** WESTERN GOSHAWK.— Rare summer resident. I feel positive that it breeds.

82. **Buteo borealis calurus.** WESTERN RED-TAIL.— Rare summer resident. Probably breeds.

83. **Aquila chrysaëtos.** GOLDEN EAGLE.— Rare migrant. Saw a pair on April 20, 1905.

84. **Haliæetus leucocephalus alascanus.** NORTHERN BALD EAGLE.— Rather rare resident. Breeds. Formerly abundant. Possibly *H. leucocephalus.*

85. **Falco peregrinus anatum.** DUCK HAWK.— Not uncommon during migrations on the duck marshes.

86. **Falco columbarius.** PIGEON HAWK.— Have seen but one example, which I shot April 13, 1897.

87. **Falco columbarius suckleyi.** BLACK MERLIN.— Not uncommon during migrations. Rare but regular summer resident. Breeds.

88. **Falco sparverius phalœna.** DESERT SPARROW HAWK.— Common summer resident, but rare in winter. Breeds.

89. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.— Rare summer resident, though formerly it nested on every fresh water lake. Breeds.

90. **Asio wilsonius.** LONG-EARED OWL.— A rare visitor during migrations.

91. **Asio accipitrinus.** SHORT-EARED OWL.— Not uncommon during migrations.

92. **Syrnium occidentale caurinum.** NORTHERN SPOTTED OWL.— Have seen this bird but once, when some boys pointed it out to me in a small tree. It was very tame, but its sight was perfect. Seen Oct. 19, 1898.

93. **Cryptoglaux acadica scotæ.** NORTHWEST SAW-WHET OWL.— Have seen this bird but once, Oct. 15, 1904, when it was shot. Their retiring habits possibly account for their seeming scarcity.

94. **Megascops asio kennicottii.** KENNICOTT'S SCREECH OWL.— Not uncommon resident and a terror to small birds and mice. Breeds.

95. **Bubo virginianus saturatus.** DUSKY HORNED OWL.— Common in fall and winter, but I have never heard them utter a note.

96. **Nyctea nyctea.** SNOWY OWL.— Rare. During the winter of 1896–97 large numbers visited the tide-flats around Tacoma. They were exceedingly wary and could see perfectly, in spite of the glare of bright sunshine on the snow.

97. **Speotyto cunicularia hypogæa.** BURROWING OWL.— Have seen it but once, Sept. 23, 1899. A visitor from east of the Cascades.

98. **Glaucidium gnoma californicum.** CALIFORNIA PYGMY OWL.— Not uncommon resident and an unprincipled little bird killer. Breeds.

99. **Coccygus americanus occidentalis.** CALIFORNIA CUCKOO.— Rather rare summer resident, of local distribution. Nests in dense thickets.

100. **Ceryle alcyon.** BELTED KINGFISHER.— Resident. Common in summer, but scarce in winter. Breeds.

101. **Dryobates villosus harrisii.** HARRIS'S WOODPECKER.— Not uncommon resident of the higher elevations. Nests always in a dead fir.

102. **Dryobates pubescens gairdnerii.** GAIRDNER'S WOODPECKER.— Not uncommon resident. Always nests in a dead deciduous tree near water.

103. **Sphyrapicus ruber notkensis.** NORTHERN RED-BREASTED SAPSUCKER.— Not uncommon in summer in the Puyallup Valley. Breeds. Rare in winter, but of regular occurrence.

104. **Ceophlœus pileatus abieticola.** NORTHERN PILEATED WOODPECKER.— A rather rare resident of the fir timber. Breeds.

105. **Asyndesmus torquatus.** LEWIS'S WOODPECKER.— Common summer resident of the Puyallup Valley. Breeds.

106. **Colaptes cafer collaris.** RED-SHAFTED FLICKER.— Not uncommon migrant. Breeds east of the Cascades.

107. **Colaptes cafer saturatior.** NORTHWESTERN FLICKER.— Resident. Common in summer, but scarcer in winter. Nests everywhere.

108. **Chordeiles virginianus.** NIGHTHAWK.— Common summer resident. Often lays its eggs on the roofs of houses in the city.

109. **Cypseloides niger borealis.** BLACK SWIFT.— Not uncommon in spring and fall, and always seen in flocks of six or more.

110. **Chætura vauxii.** VAUX'S SWIFT.— Not uncommon summer resident, breeding regularly in the Puyallup Valley. Nests in the hollow tops of dead cotton-wood trees, 100 feet or more from the ground.

111. **Selasphorus rufus.** RUFOUS HUMMER.— Common summer resident and one of our earliest migrants. Arrives late in March and lays the first set of eggs by April 15, before the last snow has gone.

112. **Selasphorus alleni.** ALLEN'S HUMMER.— Have seen this bird only in spring migrations, when it is far from common.

113. **Stellula calliope.** CALLIOPE HUMMER.— A rare summer visitor from the Cascades. Saw one in Wright Park on May 10, 1905.

114. **Tyrannus tyrannus.** KINGBIRD.— A rare summer visitor. Not uncommon in summer east of the Cascades.

115. **Tyrannus verticalis.** ARKANSAS KINGBIRD.—A rare summer visitor. Common summer resident east of the Cascades.

116. **Myiarchus cinerascens.** ASH-THROATED FLYCATCHER. — A very rare summer visitor. Saw a pair on May 24, 1905. Have found it nesting at North Yakima, east of the Cascades.

117. **Sayornis saya.** SAY'S PHŒBE.— A rare summer visitor from east of the Cascades.

118. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.— An uncommon though regular summer resident. Breeds.

119. **Contopus richardsonii.** WESTERN WOOD PEWEE.— Rather common during migrations, but a rare summer resident. Breeds.

120. **Empidonax difficilis.** WESTERN FLYCATCHER.— Common summer resident. Builds its nest anywhere, in the midst of the city or in the deepest wood, six inches up in a fern or forty feet up in a fir.

121. **Empidonax traillii.** TRAILL'S FLYCATCHER.— Common summer resident. Essentially a bird of the lowlands, seldom encroaching on the range of *E. difficilis*, which prefers higher elevations. Breeds.

122. **Empidonax hammondi.** HAMMOND'S FLYCATCHER.— Not common, but a regular summer resident. Breeds.

123. **Otocoris alpestris strigata.** STREAKED HORNED LARK.— Common summer resident of the dryest prairies. Breeds.

124. **Pica pica hudsonica.** AMERICAN MAGPIE.— Rather common migrant from east of the Cascades. Rarely seen in summer.

125. **Cyanocitta stelleri.** STELLER'S JAY.— Rather common resident. Breeds.

126. **Perisoreus obscurus.** OREGON JAY.— A winter visitor from the Cascades, where it is common in summer.

127. **Corvus corax sinuatus.** AMERICAN RAVEN.— A rare visitor, only seen in summer. One seen May 6, 1905.

128. **Corvus brachyrhynchos.** AMERICAN CROW.— Common resident. Breeds. Possibly this bird may be *hesperis*.

129. **Corvus caurinus.** NORTHWEST CROW.— Common resident. This small species seems to confine itself altogether to the salt water and tide flats. Breeds in small colonies.

130. **Molothrus ater.** COWBIRD.— An extremely rare summer visitor.

131. **Agelaius phœniceus caurinus.** NORTHWESTERN RED-WING.— Common resident, though most plentiful in summer. Breeds.

132. **Sturnella magna neglecta.** WESTERN MEADOWLARK.— Common resident, though less plentiful in winter. Breeds.

133. **Icterus bullocki.** BULLOCK'S ORIOLE.— A rare summer visitor from east of the Cascades.

134. **Euphagus cyanocephalus.** BREWER'S BLACKBIRD.— Common resident. Very erratic in nesting habits, building sometimes three feet up in a bush, and again selecting some cavity 150 feet up in a dead fir.

135. **Hesperiphona vespertina montanus.** WESTERN EVENING GROSBEAK.— Resident throughout the year, though more common some years than others. During the past summer (1905) they could be found at any time.

136. **Carpodacus purpureus californicus.** CALIFORNIA PURPLE FINCH.— Common resident, though most plentiful in summer. Breeds.

137. **Loxia curvirostra minor.** AMERICAN CROSSBILL.— Distribution exactly the same as that of the Western Evening Grosbeak.

138. **Acanthis linaria.** REDPOLL.— I have only one record of this species (Nov. 1900). It is common east of the Cascades.

139. **Astragalinus tristis salicamans.** WILLOW GOLDFINCH.—Rather common in summer, though formerly rare. Breeds.

140. **Spinus pinus.** PINE SISKIN.— Common throughout the year; seen at all seasons in large flocks. At any time from April 15 to Sept. 1 pairs will detach themselves from the main flocks and raise their broods.

141. **Passer domesticus.** ENGLISH SPARROW.— Common resident, unfortunately increasing every year. Breeds.

142. **Passerina nivalis.** SNOWFLAKE.— A rare winter visitor.

143. **Poœcetes gramineus affinis.** OREGON VESPER SPARROW.— Common summer resident, of local distribution. Breeds.

144. **Passerculus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.— Common summer resident. Breeds.

145. **Zonotrichia leucophrys nuttalli.** NUTTALL'S SPARROW.— Common summer resident. Breeds.

146. **Zonotrichia coronata.** GOLDEN-CROWNED SPARROW.— Common migrant. Have seen them as late as May 25, but doubt if they breed.

147. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.— Very abundant summer resident. Breeds.

148. **Junco hyemalis oreganus.** OREGON JUNCO.— Formerly common resident, but now very rare in summer. Breeds.

149. **Junco hyemalis shufeldti.** SHUFELDT'S JUNCO.— Formerly rare, but now a common summer resident. Breeds.

150. **Melospiza cinerea morphna.** RUSTY SONG SPARROW.— Abundant resident. Breeds.

151. **Passerella iliaca unalaschensis.** TOWNSEND'S SPARROW.— Rather rare spring and fall migrant. Possibly *P. i. fuliginosa*.

152. **Pipilo maculatus oregonus.** OREGON TOWHEE.— Common resident. Breeds.

153. **Zamelodia melanocephala.** BLACK-HEADED GROSBEAK.— Rare summer resident. Breeds.

154. **Cyanospiza amœna.** LAZULI BUNTING.— Rare summer visitor.

155. **Piranga ludoviciana.** LOUISIANA TANAGER.— Common summer resident. Breeds.

156. **Progne subis.** PURPLE MARTIN.— Common summer resident. Breeds. It is possible that these birds are *P. s. hesperia*, but, coming only in the city, one cannot shoot them.

157. **Petrochelidon lunifrons.** CLIFF SWALLOW.— Common summer resident along the outskirts of the city. Breeds.

158. **Hirundo erythrogastra.** BARN SWALLOW.— Common summer resident. Breeds often in the city, building its nests on the outside of houses under the eaves.

159. **Iridoprocne bicolor.** TREE SWALLOW.— Common summer resident, breeding mostly in trees in the country.

160. **Tachycineta thalassina lepida.** VIOLET-GREEN SWALLOW.— Common summer resident, nesting mostly in and around houses.

161. **Riparia riparia.** BANK SWALLOW.— Rather rare summer resident, always nesting in small colonies.

162. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.—Common summer resident. Nests chiefly along the salt water, often digging its burrow within a foot or two of that of a Pigeon Guillemot.

163. **Ampelis cedrorum.** CEDAR WAXWING.— Common resident. Breeds in both high and low localities.

164. **Lanius borealis.** NORTHERN SHRIKE.— Not uncommon during winter and in migrations. Frequently heard singing.

165. **Vireo olivaceus.** RED-EYED VIREO.— Rare summer visitor. While collecting in the Puyallup Valley with my brother on June 23, 1899, we saw and heard at least six.

166. **Vireo gilvus swainsonii.** WESTERN WARBLING VIREO.— Common summer resident, nesting nearer the ground than *V. gilvus*.

167. **Vireo solitarius cassinii.** CASSIN'S VIREO.— An irregular summer resident, sometimes quite common. Breeds.

168. **Vireo huttoni obscurus.** ANTHONY'S VIREO.— A regular but rare summer resident. The only nest I have heard of was found by my brother, Mr. C. W. Bowles, on June 21, 1897. It contained two eggs, slightly incubated, and was collected with the female parent.

169. **Helminthophila rubricapilla gutturalis.** CALAVERAS WARBLER. — Not an uncommon summer resident. Nests only on the oak dotted prairies.

170. **Helminthophila celata lutescens.** LUTESCENT WARBLER.— Common summer resident. The first migratory warbler in spring, arriving early in April. Nests on bushy hillsides and in the valley.

171. **Dendroica æstiva.** YELLOW WARBLER.— Abundant summer resident. Nests anywhere it can find water.

172. **Dendroica coronata.** MYRTLE WARBLER.— An irregular fall migrant, very numerous some years, the fall of 1905 for example. Have never seen it in spring.

173. **Dendroica auduboni.** AUDUBON'S WARBLER.— Rather common summer resident, a few wintering. Nests only in firs, never at a lower altitude than 300 feet.

174. **Dendroica nigrescens.** BLACK-THROATED GRAY WARBLER.— A summer resident, some years abundant. Seldom occurs at a lower altitude than 300 feet. Nests in the tall firs.

175. **Dendroica townsendi.** TOWNSEND'S WARBLER.— A rare summer resident of the higher altitudes.

176. **Dendroica occidentalis.** HERMIT WARBLER.— Not uncommon in summer, but very locally distributed. Seen only above 300 feet altitude where it stays mostly in the tallest firs. Took a set of five slightly incubated eggs on June 11, 1905.

177. **Geothlypis tolmiei.** MACGILLIVRAY'S WARBLER. — Not an uncommon summer resident in the thickets at about 300 feet.

178. **Geothlypis trichas arizela.** PACIFIC YELLOW-THROAT.— Common along the edges of certain fresh water marshes in all altitudes during summer, but for some reason absent in many similar locations.

179. **Icteria virens longicauda.** LONG-TAILED CHAT.— Rare summer visitor. One seen June 4, 1905.

180. **Wilsonia pusilla chryseola.** GOLDEN PILEOLATED WARBLER.— Not an uncommon summer resident in the thickets of the Puyallup Valley. Occasionally nests as high as 300 feet.

181. **Anthus pensilvanicus.** AMERICAN PIPIT.— Common in the spring and fall migrations.

182. **Cinclus mexicanus.** AMERICAN DIPPER.— Not uncommon along the streams in spring and fall. Breeds in the foothills.

183. **Thryomanes bewickii calophonus.** PACIFIC BEWICK WREN.— Rather common resident, retiring to the salt marshes in winter. Breeds.

184. **Troglodytes aëdon aztecus.** WESTERN HOUSE WREN.— Common summer resident. Nests in the city, and in the woods far from houses.

185. **Olbiorchilus hiemalis pacificus.** WESTERN WINTER WREN.— Common resident. Breeds in the densest thickets of the deep gulches, thus making the nest very difficult to find.

186. **Telmatodytes palustris paludicola.** TULE WREN.— Common summer resident; not rare in winter. Breeds.

187. **Certhia familiaris occidentalis.** TAWNY CREEPER.— Rather rare resident. Nest with six well grown young found May 17, 1905.

188. **Sitta carolinensis aculeata.** SLENDER-BILLED NUTHATCH.— Not common, though resident. Breeds.

189. **Sitta canadensis.** RED-BREASTED NUTHATCH.— Not an uncommon resident. Nests close to fresh water.

190. **Parus atricapillus occidentalis.** OREGON CHICKADEE.— Common in summer, but scarce in winter. Nests in dead deciduous trees in the vicinity of fresh water.

191. **Parus rufescens.** CHESTNUT-BACKED CHICKADEE.— Common resident. Nests in dead fir stumps at a distance from water.

192. **Psaltriparus minimus saturatus.** PUGET SOUND BUSH-TIT.— Common resident. Breeds, nesting at all altitudes in any kind of bush or tree.

193. **Regulus satrapa olivaceus.** WESTERN GOLDEN-CROWNED KINGLET.— Common resident. Breeds among the densest firs, thus making the finding of a nest simply a matter of accident.

194. **Regulus calendula grinnelli.** SITKA RUBY-CROWNED KINGLET. — A common winter resident, but have never seen it later than April.

195. **Myadestes townsendii.** TOWNSEND'S SOLITAIRE.— An occasional though not common winter resident.

196. **Hylocichla ustulatus.** RUSSET-BACKED THRUSH.— A very abundant summer resident. Nests at all elevations.

197. **Hylocichla guttata nana.** DWARF HERMIT THRUSH.— Rather common during migrations. Breeds in the mountains.

198. **Merula migratoria migratoria.** AMERICAN ROBIN.— Not uncommon from late fall until early spring. Have never seen it in summer.

199. **Merula migratoria propinqua.** WESTERN ROBIN.— Abundant summer resident, though less common in winter. Breeds.

200. **Ixoreus nævius.** VARIED THRUSH.— Common during migrations and not uncommon in winter. A few breed in the deep gulches at about 400 feet altitude.

201. **Sialia mexicana.** WESTERN BLUEBIRD.— Common summer resident, a few remaining throughout the year. Nests in bird houses in the city, and in trees far from civilization.

WHERE DOES THE LARGE-BILLED SPARROW SPEND THE SUMMER?

BY A. W. ANTHONY.

IN THE January issue of 'The Auk,' 1905, Mr. Joseph Grinnell has given us some interesting notes on the Large-billed Sparrow (*Passerculus rostratus*), and called attention to the fact that this species, which is in winter abundant all along the coast of southern California and the northern half of Lower California, has until the present time succeeded in keeping its breeding ground so well hidden that with all of the dozens of trained collectors that have studied the species on its range, none seem to be able to state where it nests.

It is no doubt true that there has been no authentic record of eggs found or nests taken, but the region is so well known both north and south of the winter home of the Large-billed Sparrow, and the local lists for the coast from San Francisco south are so complete, that I think we can locate the summer and breeding range of this species within fairly definite limits and with reasonable accuracy. I think that perhaps the shortest route to the probable nesting grounds will be by a process of elimination of some of those sections where it does not nest.

So far the most northern record for the species is Santa Cruz, nor is it at all common north of Point Conception, I think. If the nesting ground were to be sought for in the north, certainly some of the many collectors in the region of San Francisco would have reported migrating birds, and as none have been recorded, we may for the moment consider the coast region of the north as out of the nesting habitat.

As for the winter range, anyone who has collected in the tide flats about San Diego Bay can testify that here at least they swarm until March 5 or later. Such cover would seem to best suit the requirements of the species, for I have found them equally abundant in all similar localities south of San Diego, notably San Quintin, Lower California, and Todas Santos Bay, south of Ensenada.

That there is a regular migration is attested by their appearance

in September on all of the coast islands that I have visited in that season from San Clemente south as far as Natividad, and including Cerros and Los Benitos. On this last is found a subspecies (*P. r. sanctorum*) that no doubt was derived from *rostratus* that in the past lingered on this island to nest and in time became resident. The Large-billed and San Benito Sparrows are equally abundant along the beaches, gleaning a livelihood from beds of stranded kelp, over which they skurry like mice in search of insects and small marine life.

Nests of *sanctorum* were found by both R. C. McGregor and myself, one being in a low bush about one foot from the ground, and the others well hidden in shallow depressions in the soil and overhung by vegetation, very similar in fact to the nests of *beldingi*, except that the Benito Islands offer no tide flats or marsh lands and *sanctorum* is obliged to nest on dry ground.

Nor does *rostratus* nest on any of the islands of the west coast of Lower California, as my visits to those islands have been frequent, and I have found the species as a winter visitant only.

The ocean beaches as far as Cape St. Lucas offer also winter range for *rostratus*, but while they are by no means rare on both sandy and rocky shores, they are nowhere really abundant away from the tide flats of the bays.

So far as an inland breeding range is to be considered, I have never seen a Large-billed Sparrow over half a mile from tide water, and one that wanders over a few hundred yards from the tide flats or beach is at once noticed as out of place by those who are familiar with the species, which is, according to my experience, strictly littoral.

So much for a few of the places that, for the purposes of this article, it may be considered that the species does not breed. As for a breeding range in a distant or southern country I will presently show that such is at least highly improbable.

San Ramon is a Mexican ranch on the coast of Lower California about 25 miles north of San Quintin Bay. Mr. Grinnell has quoted me as reporting a nesting *rostratus* from this point but would seem to doubt the validity of the record. At the present writing I have a very distinct recollection of the bird mentioned and a glance at the conditions surrounding that region may throw some light on

the question at issue. The beach at this point was, in 1887, thickly covered by drift wood, which reached back some two hundred feet to the sand dunes and was often piled up several feet in height. Through these tangled piles of drift *rostratus* were running, dodging in and out very much after the manner of Rock Wrens in a pile of rocks, and it was one of the many seen here that I shot and recorded as a nesting bird on the evidence of a swollen and bare breast.

I was at that time unfamiliar with the fauna of the coast, and supposed that I would find plenty of nests at San Quintin, my next camp. I allowed the opportunity to pass, and in several years spent in Lower California never again collected at San Ramon. Several years later, in discussing the possible nesting grounds of this species with Mr. A. M. Ingersoll of San Diego, he told me of seeing a Large-billed Sparrow collecting the larva of the flesh fly about the carcass of a cow near San Diego. The very businesslike way in which the bird flew away, maintaining a direct flight as far as his eye could follow, led him to believe that it went direct to a nest of young, but at such a distance that he was unable to locate it. There is no doubt in my mind that Mr. Ingersoll did happen on a nesting bird, but perhaps one somewhat out of the nesting ground proper, for I have since then, on two or three occasions, found families of young that were still fed by their parents on the beach near Ocean Side, not far from where Mr. Ingersoll found the bird that I recorded. The fact that these young were still in groups of three to four, and still fed by one or both parents, would argue that the nesting ground was not many miles distant.

In searching for a possible breeding ground my thoughts harked back to the San Ramon capture, and I recalled that a few hundred feet back from the beach occurred a number of small lagoons caused by the river being cut off from entrance to the Pacific by a series of sand dunes and bars, a very common condition and one found at the mouths of many of the shallow 'rivers' of southern and Lower California. These shallow ponds, extending for perhaps half a mile along the beach, were thickly grown along the banks with tules, furnishing cover for many of the birds of that region. During the few hours spent in collecting at this camp I paid no attention to this cover, being more interested elsewhere, so I am unable to say whether *rostratus* inhabited these thickets, but the piles of drift

I have mentioned were but a stone's throw distant, and from what I now know of the habits of the species, I would expect to find the nest in just that character of cover rather than in the drift wood where the birds were feeding.

Tule swamps are found bordering the beach, at the mouths of several of the streams north of San Diego but so far as I know no one has reported on the birds nesting there.

As Mr. Grinnell has said, "it might not be a sin to speculate somewhat in this regard." Can we not by defining the north, east, and south boundaries beyond which we are reasonably sure the species does not pass, mark the probable summer habitat? It is true the absence of summer records would reduce this more or less to a matter of individual opinion, and my own opinion, based on more than ten years' observation, is that the Large-billed Sparrow is resident along that part of the coast south of San Pedro to San Ramon, Lower California, and that it merely retires to its nesting ground a few miles distant to return in August. An overflow migration carries the species to the islands and as far as Cape St. Lucas, but I very much doubt any being found nesting south of San Ramon, or possibly the valley of the Rosario River about fifty miles south of San Quintin.

If we accept this as the probable summer habitat it remains to find the nesting ground, and I agree with Mr. Grinnell that it is not in the salt marshes. They have been well explored, and from San Quintin north *beldingi* is the only member of the genus to be found in these localities after the nesting begins.

FURTHER NOTES ON THE BIRDS OF LEON COUNTY, FLORIDA.

BY R. W. WILLIAMS, JR.

A YEAR ago I published a preliminary list of the birds of Leon County, Florida,[1] which comprised the species I had then observed, with notes of such facts connected with them as seemed of special interest. As subsequent observations, besides materially extending this list, have added information concerning the birds already listed, it seems desirable to publish a supplementary article on the birds of the county.

Most of the information here recorded was gathered in the fall of 1904 during early morning excursions through McDougall's pasture and to a thickly wooded hill a quarter of a mile from the city limits, which I have designated in my journals, and likewise do here, as 'Lively's woods,' from the name of the owner. Birds found here are individually and specifically so numerous that a brief description of the locality may be interesting. McDougall's pasture, ornithologically the most productive limited area I have ever seen, covers about sixty acres. A small cypress swamp, with its marshes, occupies the center, from which, on the eastern and western sides gradually rises a symmetrical, grass-carpeted hill, that on the western reaching its highest elevation in the back yard of the owners of the pasture, just on the line that marks the eastern limits of Tallahassee. The eastern one terminates (and the country thence assumes a level condition) at the western edge of Lively's woods. This woodland occupies an area of about thirteen acres and is composed largely of such trees as the live and water oaks, sweet gums, hickories, pines, magnolias, persimmons, and hollies, none of which attain any great size and the oaks are rather remarkable for their slenderness and the scarcity of their lower branches or twigs, the growth of which has developed principally at and near the top. Among the leaves and branches of these trees I found the migrating warblers very abundant and was surprised to note

[1] Auk, Vol. XXI, 1904, pp. 449–462.

the large quantity of insect food they procured there. The minor shrubbery is in places quite thick and furnishes a home for the more terrestrial species. The Seaboard Air Line Railroad cuts off a small strip of low woodland on the south side where the magnolias and sweet gums assume gigantic proportions, and through which runs a clear, cool and swift little stream, the watering place of the birds frequenting the locality. From its comparatively high situation and the abundance of food, Lively's woods furnishes a tempting halting place for the small birds passing southward in the fall. I was often in the woods at daybreak, and from that time till about 7 o'clock the migrants were very active, but after that hour and on throughout the day they could not be found.

What uncomfortable recollections still linger with me of the pains and penalties inflicted by that microscopic pest, the red bug (*Leptus*). Every conceivable spot in the woodland seemed infested by them and to entirely escape the plague was quite impossible though the severity of their sting was largely mitigated by the free use of sulphur sprinkled down the legs of my underclothes before leaving home.

The absence of a number before the species following indicates its incorporation in the former list and the addition of a number, that it is now recorded for the first time. I have continued the numbers in serial order from my first paper, thereby the more readily to present the number of species found in the county.

LIST OF SPECIES.

157. **Anas obscura.** BLACK DUCK.— Found three of these birds on sale at one of the stores on Nov. 8, 1904. They had been killed on Lake Jackson.

Sayornis phœbe. PHŒBE.— First seen in fall of 1904, Oct. 2.

Contopus virens. WOOD PEWEE.— First seen in fall of 1904, Aug. 28. From this date till Oct. 12 they were fairly common, but then disappeared. I have no evidence yet of their occurrence in the county during spring or early summer.

158. **Empidonax virescens.** GREEN-CRESTED FLYCATCHER.— Sept. 11, 1904, I saw the bird for the first time in the county, in a dark, damp part of Lively's woods. The explosive *peet* made known its presence. Last seen Oct. 9. It has been recorded as a nesting bird in South Florida but I am satisfied it does not even occur in Leon County except as a fall, and perhaps a spring, migrant.

Agelaius phœniceus. RED-WINGED BLACKBIRD.— I stated in my former article that the males of this species assume the female plumage in winter. In his notice of the article in 'Bird-Lore' for November-December, 1904, Dr. Dwight very gracefully suggests the error of this assertion and says: "He has evidently mistaken the young males for the females and not seen the black adults with the red shoulder-patches. This raises the question, Where have the adults betaken themselves? for they are certainly conspicuous enough not to escape notice." I freely acknowledge the mistake and hope to be able to answer the question some time in the future. The fact is, however, that the birds wintering with us have no shoulder-patch.

Sturnella magna argutula. SOUTHERN MEADOWLARK.— The Leon County meadowlarks must be referred to this subspecies. The difference in size between the birds found here and those taken in Maryland is very marked, the latter being, of course, the larger.

Astragalinus tristis. AMERICAN GOLDFINCH.—First seen in fall of 1904, Nov. 17. I was not afield the ten days prior to this date and they may have arrived a few days prior thereto.

Poœcetes gramineus. VESPER SPARROW.— First seen in fall of 1904, Oct. 13. They were rather common, and as I walked through McDougall's pasture in the dim light of early morning they arose from the short tufts of grass on all sides and scurried away to an apparently safe distance, incessantly uttering their faint monosyllabic *chip*.

Passerculus sandwichensis savanna. SAVANNA SPARROW.— For the first time I am now able to give some accurate information respecting this bird in the county. On the morning of Oct. 6, 1904, while walking through the pasture, I flushed several from the short tufts of grass but was unable to procure a specimen. I was more fortunate that evening, when, just before nightfall I took a chance shot at one, a female, that flushed some distance away and lit within range of my 'aux.' This date marks the first fall appearance of the bird in the county in 1904. At all events it is my first record, and I was in the field almost daily prior thereto. From this date till Oct. 28 they were fairly common, after which the numbers diminished perceptibly. As I met with the bird during January and February I conclude that it must be a winter resident in limited numbers.

Spizella pusilla. FIELD SPARROW.— It gives me great pleasure to here record the species as a nesting bird in the county, although Mr. Wayne has heretofore mentioned it as a nesting species in the adjoining county of Jefferson. On Dec. 10, 1904, I was shooting partridges (*Colinus*) in a large broomsedge field four miles from town. Everywhere were tangled masses of blackberry vines. The covey was nicely scattered, the birds rising singly. I had three on the ground and concluded to pick them up before flushing another. As I stooped to recover the first, my attention was suddenly arrested by a well preserved nest, which struck me instantly as that of a sparrow. I temporarily forgot the partridge in my zeal to identify the nest. Carefully removing it from its thorny surroundings, I safely

packed it away in a manila envelope I had with me. A darkey boy with me, who lived in the neighborhood, seeing my evident interest in the nest volunteered the statement that it was "a sparrow's nest." He had seen several, with eggs, in this same field during the "blackberry time." Questioning him closely, I found that his information was accurate in every detail to a highly satisfactory degree. He described the eggs minutely and stated the correct number, and if any doubt of the identity of the nest could have existed before it was dispelled by his statements.

Melospiza cinerea melodia. SONG SPARROW.— First record for the fall of 1904 was on Oct. 16. Several were feeding in the bullrushes of McDougall's swamp. They were singing sweetly on March 12, 1905.

Melospiza georgiana. SWAMP SPARROW.— First seen in the fall of 1904, Oct. 6. An exceedingly common bird in the bullrushes of McDougall's swamp.

Cyanospiza cyanea. INDIGO BUNTING.— During the latter part of August I found these birds very abundant in the sweet gums and oaks scattered here and there in McDougall's pasture. For some time I was unable to procure a specimen as they were extremely wary and remained, for the short time I had to be afield in the morning, in the topmost branches of the largest trees. Finally on Oct. 9, finding a number feeding in a small rice patch across the railroad, I procured specimens. Last seen Oct. 15.

Piranga erythromelas. SCARLET TANAGER.— Collected an adult female in Lively's woods Oct. 12, 1904. Have no further records.

Piranga rubra. SUMMER TANAGER.— The bulk of these birds left the county about the close of September. On Oct. 26 I collected a young female in Lively's woods — a very late date for this bird in the county.

159. **Hirundo erythrogastra.** BARN SWALLOW.— Found a number of these birds circling over the pasture in quest of their insect prey on the evening of Aug. 28. Their graceful flight lent a charm to the scene of the quiet pasture near the close of that perfect day.

Vireo olivaceus. RED-EYED VIREO.— A very common bird during the fall. The bulk arrived in 1904 the latter part of August and none were seen after Oct. 15. The bird nests in the county sparingly.

160. **Vireo solitarius.** BLUE-HEADED VIREO.— On Jan. 22, 1905, I saw this species in the county for the first time, a single bird in Lively's woods. Recorded another Jan. 29.

Vireo noveboracensis. WHITE-EYED VIREO.— I found these birds quite common in Lively's woods on October 7. One was singing sweetly from the upper branches of a small sweetgum. The bulk of these birds left the county about Oct. 15. The bird nests sparingly with us.

Mniotilta varia. BLACK-AND-WHITE WARBLER.— Found very abundant on Aug. 28 in Lively's woods. Evidently a band on their way south from their northern homes.

161. **Helinaia swainsonii.** SWAINSON WARBLER.— Each succeeding day of the fall of 1904 seemed destined to produce for me some record of a new species or valuable additional or cumulative evidence respecting species

heretofore known only casually. The height of my good fortune was reached when on the morning of Sept. 24, by the purest chance, I secured a single example of this species. The bird was taken in the coppice bordering Lively's woods, within a few inches of the spot where a week before I had collected my first Worm-eating Warbler of the county. This is the first and only record I have for the county. Diligent search for others after that date developed nothing.

162. **Helmitherus vermivorus.** WORM-EATING WARBLER.— I collected a single specimen in Lively's woods on Sept. 16. The bird was in the coppice bordering the woods and, as stated above, within a few inches of the spot where I collected the Swainson Warbler. Search failed to reward me again and I am of the opinion that this species is a rare migrant. Why I had never seen these two species before may be accounted for by my disposition to enjoy that 'morning nap' one hears so much of. My experiences during this fall impressed upon me the necessity of early morning work if one expects to know the birds of his locality.

163. **Helminthophila celata.** ORANGE-CROWNED WARBLER.— This species is doubtless a winter resident in the county. On Jan. 31, 1905, I collected one in Lively's woods; it was feeding with a number of Golden-crowned Kinglets. On March 12 I found them in the sweet gum trees of the pasture.

164. **Helminthophila peregrina.** TENNESSEE WARBLER.— So far as I am now aware this species is a fall migrant only. I found a migrating band on the morning of Oct. 26, 1904, feeding in the top branches of the slender oaks of Lively's woods. They were passing from tree to tree at a lively rate and I had some difficulty in keeping up with them. Collected three, male and female and one not examined, and another on the 28th.

Compsothlypis americana. PARULA WARBLER.— These birds were quite common from the middle of August to the middle of October. On the 16th of the latter month I found a number feeding on and near the ground in a cotton field. They left the county about Oct. 20.

Dendroica coronata. MYRTLE WARBLER.— Arrived Oct. 16 and was immediately common.

165. **Dendroica maculosa.** MAGNOLIA WARBLER. — I collected a single specimen on Oct. 11. The bird was in a vine-covered tree on the border of a ditch running through a field near town. Have no other record, though I was on the alert for them afterwards.

166. **Dendroica pensylvanica.** CHESTNUT-SIDED WARBLER.— Collected an immature male on September 23 in Lively's woods and found them rather common until Oct. 13, when they disappeared. It is a fall migrant.

167. **Dendroica castanea.** BAY-BREASTED WARBLER.— My first and only record was made on Oct. 13 when I collected a male in Lively's woods.

168. **Dendroica striata.** BLACK-POLL WARBLER.— I saw this species for the first time in the county on Oct. 11, when I collected a male in fall plumage. On the 28th I collected another in Lively's woods.

169. **Dendroica blackburniæ.** BLACKBURNIAN WARBLER.— I am glad to be able to add this lovely species to the list of the birds of the county. On the morning of Oct. 26 I heard the monosyllabic notes of a number of birds that were passing rapidly from tree to tree in Lively's woods. I began the chase and after some difficulty succeeded in collecting two of the birds. They were Tennessee Warblers. A third shot into the bunch brought down a very pretty male Blackburnian Warbler. My only record.

Dendroica dominica. YELLOW-THROATED WARBLER.— Additional notes made in the fall of 1904 establish the constant residence of this species in the county, though the bulk of them moves further south in winter.

170. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.— I added this species to the list of the birds of the county on Oct. 12, 1904, when I collected a fine adult male in Lively's woods and on the following day, another. Have no further records.

Dendroica palmarum. PALM WARBLER.— First of season seen Oct. 16. Found them common on March 12, 1905, feeding on the ground in the pasture in company with Yellow Palm and Myrtle Warblers. I think these were birds passing through from the south.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.— As the preceding and this bird are almost inseparable in our county, what is said of the former applies in most cases to the latter. Except in the dead of winter I always find them together.

Seiurus aurocapillus. OVENBIRD.— Can now record the bird as a fall migrant. First seen Aug. 17, 1904, in Lively's woods. There were several. On Oct. 2, I again saw them and followed this by a record for Oct. 9, when they were fairly common. No more were seen.

171. **Seiurus noveboracensis notabilis.** GRINNELL WATER THRUSH. — The birds collected during the fall of 1904 are pronounced by Dr. Bishop to be of this subspecies. Late in the evening of Sept. 13, while lingering on the edge of the marsh of McDougall's swamp, lost in the quiet splendor of a day rapidly waning, my attention was attracted by several small, dark colored birds that now and again passed from the edge of the marsh near me to the tall trees of an adjoining field and returned, as something seemed to disturb them. After considerable difficulty I succeeded in collecting one, a male. On the 24th I collected another in Lively's woods. Last seen Oct. 10. They were fairly common in the pasture and Lively's woods from the first record to the last.

Seiurus motacilla. LOUISIANA WATER THRUSH.— Collected one on August 29. They were never abundant and the last were seen on Sept. 18.

172. **Oporornis formosa.** KENTUCKY WARBLER.— Met with this bird for the first time in the county on Sept. 4, 1904, when I was walking along the public road leading down past McDougall's swamp. It was in the bushes on the side of the road. Later in the day, and five miles in another direction, I found two feeding in the tall weeds bordering a dense woodland. On the 11th another was seen, and on the 18th I collected a fine male on our plantation five miles from town. This was the last seen.

Wilsonia mitrata. HOODED WARBLER.— Of the pleasant recollections of the fall of 1904 none will remain so indelibly impressed upon my memory as those of the present species. The dry and lifeless skin of this bird excites more than ordinary appreciation of the beauties of natural things, so how much more intense must be that feeling when one can spend a morning in a beautiful virgin forest inhabited by several pairs of the living birds? Such was my privilege in that memorable season. In my former paper I was in great doubt as to the status of this bird with us. I said it was a migrant, never abundant. So the matter stood until August 17, 1904, when the spirit of fall possessed me and I betook myself to Lively's woods for recreation and relief from the endless vexations and annoyances of a professional life. No sooner had I climbed the wire fence than my presence disturbed a pair of these birds which was feeding on the ground near the edge of the woods. Their characteristic alarm notes resounded through the forest and I was deeply sensible of the position I occupied — that of an unwelcomed trespasser upon the domains of at least one of the legitimate proprietors of that bounty of Providence. The birds were in a high state of plumage, which stood out in well defined contrast to their dull-colored surroundings, for the Hooded Warbler is a bird of the earth, his ambition rarely taking him into the higher trees. Contented he is to spend his days among the fallen leaves or in the humbler growth of swamp or forest. There he shines and lives and is happy. There were six or eight pairs of them in this woodland and when the necessities of the times did not demand my presence elsewhere I could enjoy an hour or two in their midst, watching their every movement with my field glasses. They seemed always actively in search of food though they went at it very deliberately, in fact the bird has a very phlegmatic disposition, in the fall at any rate, and its movements are strangely different from those of any other warbler I know. On Oct. 16 they were still there. On the 26th an oppressive silence reigned throughout the woodland — they had gone.

Setophaga ruticilla. AMERICAN REDSTART.— Saw a female on August 19, 1904, in our yard. Sept. 23 they were common in Lively's woods. None seen after Oct. 14.

Anthus pensilvanicus. AMERICAN PIPIT.— In my former paper I said I had never seen this bird. There was no truth in the statement. I had seen it a hundred times but assumed it was the Vesper Sparrow and let the matter rest. Lake Lafayette is a large body of water, no where very deep, and there are seasons when it goes entirely dry, leaving a marsh stretching to the east and west almost as far as the eye can distinguish objects the size of a large oak. The whole body of land is covered with a growth of aquatic grass which when burned off makes way for a succulent grass that cattle are fond of. The place then becomes a pasture. I was so sure the bird ought to be there and so anxious to verify the statements of my friend who asserted the abundance of the species in the county, that on the evening of Nov. 26, 1904, I stole away from my office and drove to the lake, only to find overwhelming evidence of the accuracy of his assertion. The pasture

— for so it was then — was simply alive with titlarks. Flocks of hundreds were feeding over the ground and now and then, when disturbed by some roving hound or cur of the neighborhood, a veritable cloud of the birds filled the air. I afterwards found them feeding in high, newly plowed land and on several occasions met with them in some leafless tree in the middle of a field. The bird is a common winter resident.

Galeoscoptes carolinensis. CATBIRD.— Observations made during the fall and winter of 1904–5 lead me to the belief that if the bird is a winter resident at all it is quite rare. The history of those observations is as follows: First of season seen Oct. 3, several in Lively's woods and they were very noisy; a few days later I noticed a marked diminution in their numbers; by the 28th they were only occasionally seen or heard, and after the 10th of Nov. I did not see them again till Jan. 29, 1905, when I found one in a deep woodland near town, feeding on the berries of *Smilax*. None were seen again till March 10, when I found one in our yard. I left home shortly thereafter, so know nothing of the spring movement.

Certhia familiaris fusca. BROWN CREEPER.— I was passing through the pasture on the morning of Oct. 28, on my way home from Lively's woods, when passing under a gigantic live oak, I detected the high notes of this bird. A few moments' search revealed the little fellow climbing up the side of an upright limb near the top. On Jan. 29, 1905, I found another in a strip of woods a mile from town, and on Feb. 26 saw another searching the main trunk of a large pine. The bird is a winter resident in limited numbers.

Polioptila cærulea. BLUE-GRAY GNATCATCHER.— My records of this bird's occurrence throughout the winter of 1904–5 establish its constant residence in the county, though it is quite probable that those we have in winter are birds from the north while our summer residents move further south at that season.

173. **Hylocichla fuscescens.** WILSON THRUSH. '*Whieu*'— the weird notes of an unknown and unseen bird fell upon my ear during the first few mornings of my visits to Lively's woods. It was annoying in the extreme to leave the place in ignorance of the author, but I was unable to see the bird. Finally on Sept. 11, I was able to record the species. I saw one sitting upon the lower branch of a scrub oak with drooping wings and a querulous air. Until Oct. 9 they were quite common and whiled away a part of their seemingly aimless life chasing each other around the woods. They disappeared by the middle of the month.

Hylocichla guttata pallasii. HERMIT THRUSH.— This bird is associated with my childhood, perhaps more intimately than any other species, resident or migratory. In the days of that instrument of the devil, the sling shot, it was an easy mark. It sickens my soul now to recount the numbers that must be recorded against me somewhere. If a stricken conscience is any expiation of my crime I must be partially forgiven. But all that is necessary in a paper of this character has been recorded in my former article and I only wish to continue longer that I may boast of having

heard the song of the Hermit Thrush. Although I had spent my life in the winter home of this bird and its habits were as familiar to me as those of the Mockingbird, I had never heard it utter a sound other than a low, guttural, monosyllabic note expressive of alarm and kindred emotions. I was thus unprepared for the marvelous and elaborate song I heard on that 19th day of March, 1905. It marks an epoch in my ornithological career. Referring to my journal of that date I find the following: "I was out in Lively's woods early Sunday morning, March 19, 1905. Recent rains had dampened the woods so that a gloomy aspect pervaded the whole scene. I was standing down the ravine when off in the distance, apparently over in the pasture, I heard the faint notes of what I was sure must be the Wood Thrush; its song being familiar to me in consequence of my late temporary residence in the District of Columbia. I hastened in the direction of the sounds and as I drew near the edge of the woods descried a bird sitting in a small wild plum tree. It seemed annoyed at my intrusion. I stopped to look at it and finding only a Hermit Thrush started on in quest of the singer, when to my surprise the bird settled down upon its perch and commenced in low notes the sweetest and purest song I have ever heard. A lovelier melody never fell upon more grateful ears. The notes, liquescent and ventriloquial, beginning afar off, approaching slowly and finally bursting upon me, are impossible to be described." Mr. Brewster tells me that he has heard them singing in the swamps of Jackson County in early spring.

VARIATION IN THE HAIRY WOODPECKER (*DRYOBATES VILLOSUS* AND SUBSPECIES).

BY HUBERT O. JENKINS.

THIS study was originally intended to be limited to the western forms of the Hairy Woodpecker but later it seemed desirable to include data that had accumulated concerning all of the forms.

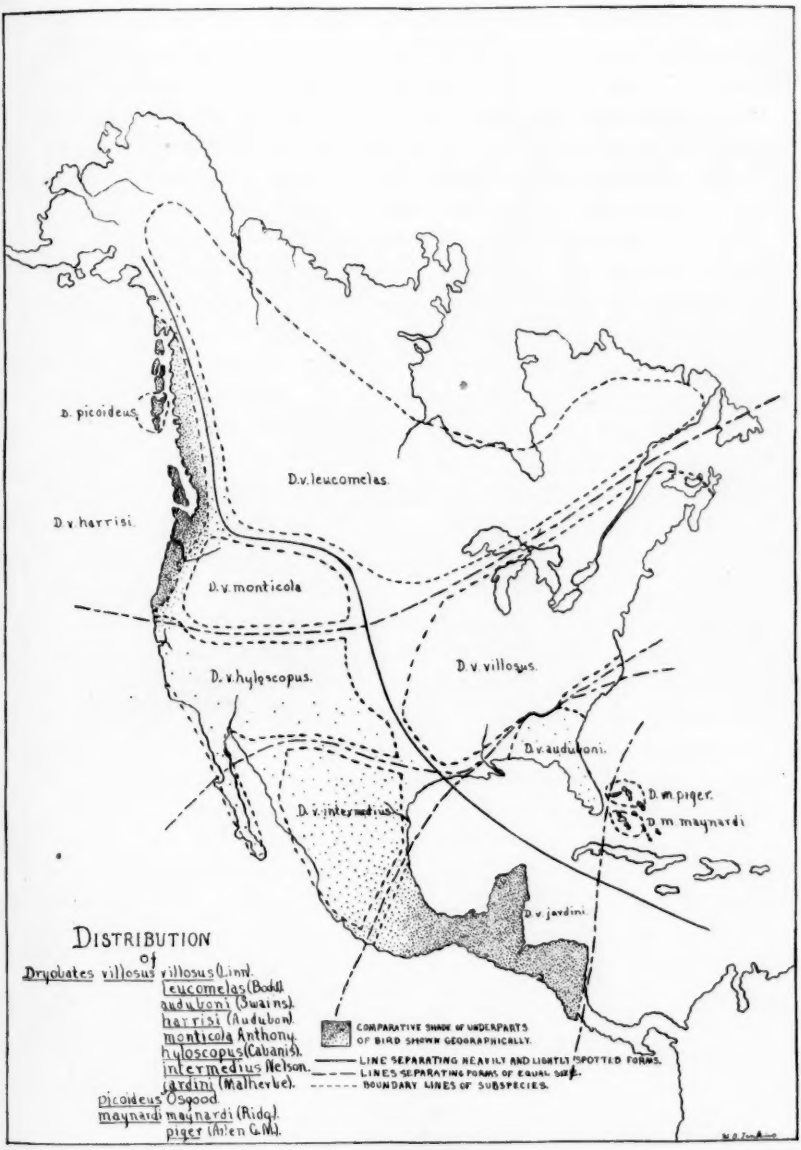
The number of adult specimens of each form examined was as follows: *D. v. harrisi*, 43; *D. v. hyloscopus*, 104; *D. v. monticola*, 7; *D. v. leucomelas*, 9; *D. v. villosus*, 12, and *D. v. auduboni*, 3. This includes a large number of intermediates and does not include some 30 immature birds.

I wish to thank Mr. Joseph Grinnell, Mr. W. K. Fisher, Prof.

J. O. Snyder, and Prof. O. P. Jenkins for numerous suggestions and assistance. For the privilege of examining specimens I am greatly indebted to the United States National Museum, the California Academy of Sciences, Mr. Joseph Grinnell, and Mr. W. Otto Emerson.

The Hairy Woodpecker is a form widely distributed over the continent of North America, ranging from Alaska and Hudson Bay to Central America and from the Atlantic to the Pacific Oceans. The bird varies somewhat in localities distant from each other so that different groups have been given different subspecific names, but from their close similarity and habits all are regarded by some authors as belonging to the same species. Its nearest relative is evidently the Downy Woodpecker, which is much smaller, although the only difference in plumage of the Downy Woodpecker is the barring of the outer tail feathers, which are pure white in the Hairy Woodpecker. In the West, although inhabiting the same general localities, the two species are not often found immediately together. In the East, however, this separation does not hold. The food question no doubt is as vital a question with them as with any other animals and on this account the birds have come to occupy the particular regions best supplying their wants. In the West the Downy Woodpecker frequents the willows and creek beds, orchards and valley districts, where it is constantly on the lookout for grubs and larvæ, digging them out of bark or spearing them with its long pointed tongue, while the Hairy Woodpecker, a stronger, hardier bird, occupies the mountainous districts and seems especially to love the pine forests. Many specimens indicate this by the telltale pitch left on their breasts. In the depth of winter it is found away up in the Boreal Zone of the Sierras, making the chips fly in search of its favorite food, undisturbed by the rigorous cold. However, it is not an abundant bird and is very shy of man. When you approach, it sidles around on the other side of the limb and watches you with one eye and if it suspects injury in the least, is gone in a moment, swinging high over the tree tops uttering its shrill, quick *peek, peek.*

As mentioned before, the Hairy Woodpecker differs more or less in different regions, and has consequently been split up into several subspecies or varieties by systematists, who recognized the differ-



DISTRIBUTION OF *Dryobates villosus* AND SUBSPECIES.

ences as soon as material began to accumulate. Linnæus[1] in his 'Systema Naturæ' of 1766 first formally named the species. He gave it the specific name of *villosus* and placed it in the genus *Picus*. This genus was later restricted to certain European Woodpeckers and the genus *Dryobates* was proposed to include the American form, so that our Hairy Woodpecker has become *Dryobates villosus*. In 1783 Boddaert[2] discovered that the birds in Canada which resembled *villosus* in markings were considerably larger, and since this difference was constant he separated the Canadian form under the name *Picus leucomelas*. Some fifty years later Swainson,[3] in examining a number of specimens of the Hairy Woodpecker from different parts of North America, came to the conclusion that those inhabiting the southern United States should have a separate name and he called them *Picus audubonì*. He had but one specimen, from Georgia, and took the risk that others from that locality would conform to his type, and he proved not to have been mistaken in his conclusions. Audubon[4] discovered a new species on the Columbia River in 1839, Malherbe[5] another in southern Mexico in 1845, and Cabanis[6] in 1863 separated the southern California bird from Audubon's *harrisi* and called it *Dryobates hyloscopus*. Audubon's bird was a very dark-breasted form, distinct from anything yet known, while Cabanis's bird was a light-breasted form, more like the eastern *villosus*, but yet with certain characters (to be mentioned later) separating it from *villosus*. In rather recent years, as more specimens were acquired, the Cabanis form was found to include more than one race. Anthony[7] described a larger bird from the Rocky Mountains and Nelson[8] found differences in specimens from the arid tablelands of northern Mexico.

When we get together material from all over North America we find that all the Hairy Woodpeckers belong to one species, and

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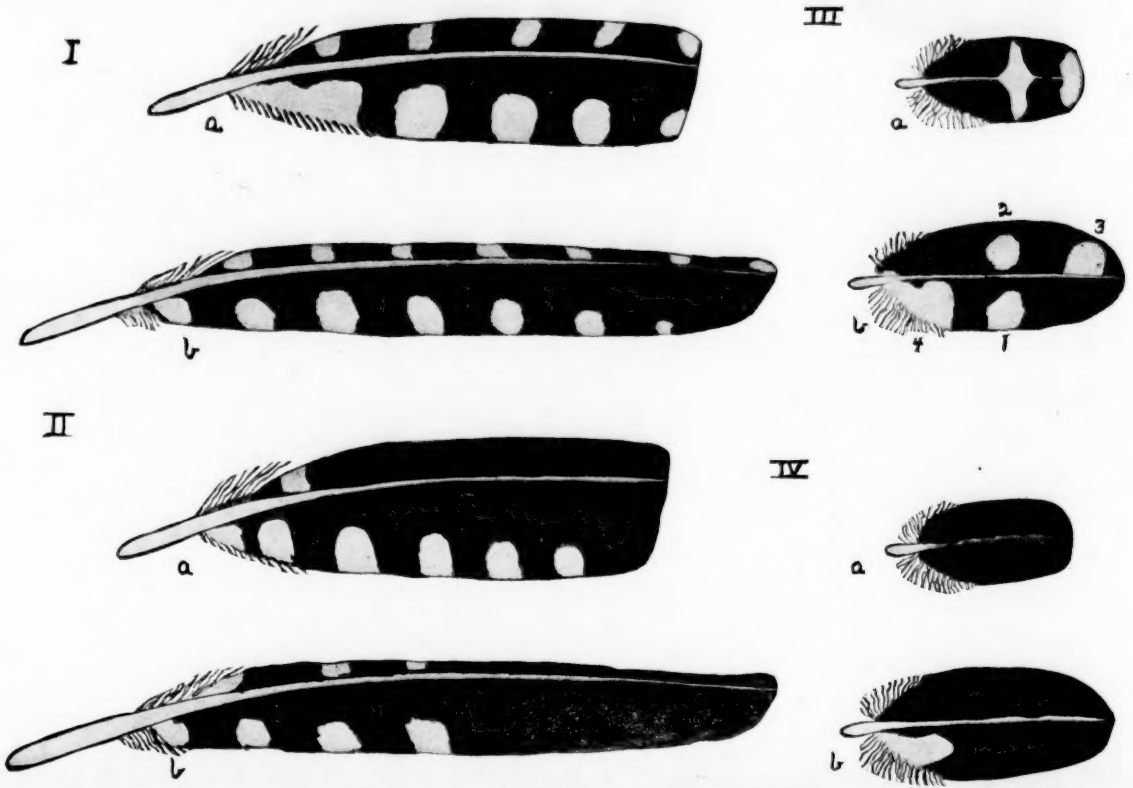
[1] Linn., S. N., ed. 12, I, 1766, p. 175.
[2] Boddaert, Tabl. Pl. Enl., 1783, p. 21.
[3] Swains. in Sw. & Rich., Fauna Bor. Am., II, 1831, p. 306.
[4] Aud., Orn. Biog., V, 1839, p. 191.
[5] Malherbe, Rev. Zool., 1845, p. 374.
[6] Cab. & Heine, Mus. Hein., IV, ii, 1863, p. 69.
[7] Anthony, Auk, XV, Jan., 1898, p. 54; *ibid.*, XIII, Jan., 1896, p. 32.
[8] Nelson, Auk, XVII, 1900, p. 259.



COMPARISON OF THE WING-SPOTTING OF THE EASTERN AND WESTERN FORMS OF *Dryobates villosus*.

I, Eastern Forms; II, Western Forms.
a Secondary, *b* primary.

III, Eastern Forms; IV, Western Forms.
a Median covert, *b* greater covert.

Boddaert's *leucomelas* and Malherbe's *jardini* are subspecies connected by links still existing for the whole length of North America.

In *Dryobates villosus leucomelas* the under parts are entirely pure white. The upper parts are black except for a white stripe down the back. The crown and sides of the head are black. There is a white stripe over and behind the eye, and another running from the nasal tufts around under the eye to spread on the side of the neck. In the male there is a scarlet nuchal band which is wanting in the female. The young of both sexes has the whole crown partly red or yellowish. The outer feathers of the tail are white and the inner black. The wings are marked profusely with white spots.

Analyzing the wing we find that the primaries have four to seven large round spots on either web which are placed equally distant apart. The proximal four spots are always present and each of the three distal ones, although generally present in all primaries except the first, is less persistent than its respective proximal neighbor. Thus the seventh or most distal spot is often absent, especially in the shorter primaries.

The secondaries have five spots on the outer web, which are round and as large as the width of the web permits. The inner web has six spots, which are quite large, and the two proximal ones are confluent.

The greater coverts have four spots, as shown in the figure, and the lesser coverts are crossed by two bars. Rarely, spot No. 1 is omitted from the greater covert and in the lesser covert there is a slight variation tending to shorten the long axis of the proximal bar.

The range of this form is northern North America from the interior of Alaska (Ft. Reliance) to Labrador and south to about the northern border of the United States. It does not include the Pacific Coast region.

Dryobates villosus villosus is much the same as *D. v. leucomelas* in coloration and markings but is a decidedly smaller bird. The primaries and secondaries have on the average the same spotting pattern, but the three-spotted greater covert predominates over the four-spotted form, and many of the median coverts have, instead of two bars, two rounded or irregularly shaped spots which are rarely coalesced to form a central streak.

Its distribution is the United States east of the Rocky Mountains and north of about 35° N. Lat.

Dryobates villosus auduboni of the southern United States is a small dark bird. The wing spotting is very little different from that of the other two forms just mentioned. The spots on the primaries and secondaries average very slightly less in number. Of course they are smaller in size than in *leucomelas*, but compared with the size of the feather they are relatively the same. The greater coverts have lost spots 1 and 2 but 3 and 4 are always present. The median coverts have a single spot which is variable in size and shape.

Compared with *leucomelas, auduboni* is extremely different. Compared with *villosus* the difference is not so great. Between the extremes of these subspecies there are intermediates in size. So that if we proceed from north to south we find a gradual and certain decrease in size. One writer[1] records a distinct line between *auduboni* and *villosus* in the southern Alleganies. He says that he found *villosus* occupying the Balsam regions above 4000 feet, and *auduboni* in the lowlands up to 4000 feet, and that all birds are easily distinguished. Very likely intergradation does not take place at that point. However, it certainly does at other localities.

Proceeding from east to west we find the birds gradually losing the white wing spots, and when we reach the Pacific Coast the closed wing shows but little white.

In the southwestern United States we have *Dryobates villosus hyloscopus*. It is more nearly the size of *D. v. villosus*. The under parts of some examples of *hyloscopus*, on close examination, show a slight tinge of brownish red, but the distinguishing character is found in the spotting of the wing. The outer web of the primary has but three spots. These correspond with the three proximal spots of the eastern form, but are much reduced in size. The inner web has retained the four proximal spots, which are also reduced in size. The secondary has lost all but the most proximal spot from the outer web. The inner web has the same number of spots as that of the eastern bird, but the spots are smaller and the two proximal ones are not confluent. The greater coverts have only spot No. 4 left. The median coverts are either entirely black or have a white streak down the center. This form is

[1] Brewster, Auk, III, p. 104.

found in California, Lower California, Arizona, and New Mexico. Some of the specimens at hand from New Mexico are intermediate in spotting between the western and eastern forms but are nearer the western.

Dryobates villosus harrisi has the wing spotting like *hyloscopus* but the light parts are a deep smoky brown. The extreme of this form is found at Vancouver Island and along the coast region of British Columbia and Washington. There, all birds are uniform smoky and the wings have a uniform scarcity of spots. In northern California and southern Oregon, *harrisi* and *hyloscopus* intergrade. In the Siskiyou Mountains are found birds that vary from pure white to very dark. At Sitka, Alaska, *harrisi* has become very much lighter and some specimens show a great increase in wing spotting. Three specimens from Ducks, B. C. (a region between the Rocky and Cascade Mountains), have characters of both *leucomelas* and *harrisi*. The under parts are pure white while the wings are scarcely spotted. A fourth specimen from the same locality is profusely spotted and hence nearer *leucomelas*.

Dryobates villosus monticola, found in the Rocky Mountains from Colorado to Montana, has a scarcity of wing spots like the other western forms but is larger than *hyloscopus* and the under parts are said to be pure white without any reddish tinge as with some *hyloscopus*. (In the series at hand there are few specimens of this form, but I believe that when more material has accumulated, the range of *D. v. monticola* will be found to extend no farther south than Colorado or farther north than southern Montana and will include Utah, northern Nevada, eastern Oregon, southeastern Washington and southern Idaho. The evidence for the southern boundary is the fact that *D. v. hyloscopus* reaches its maximum size in the northern Sierra Nevadas while specimens from Arizona and New Mexico are comparatively quite small. The northern boundary is indicated by intermediates between *D. v. leucomelas* and *D. v. monticola* taken in Montana. And if any form is to be found in the arid interior of Washington and Oregon it would not likely be *D. v. harrisi*, since that form is not found outside of the Humid Coast Belt in Alaska.)

Dryobates villosus jardini is smaller than *hyloscopus*, the under parts are very dark, and it inhabits the mountainous portions of Central America and Southern Mexico.

Dryobates villosus intermedius, ranging in the territory between *hyloscopus* and *jardini*, is smaller than *hyloscopus*, larger than *jardini*, and is also intermediate in smokiness of the underparts.

Besides the eight subspecies mentioned, there are two island forms that are not known to intergrade with the continental species.

Dryobates picoideus[1] inhabits the Queen Charlotte islands off British Columbia. It has the white stripe on the back barred or spotted, and is entirely distinct from any other form.

Dryobates maynardi includes two subspecies, *D. m. maynardi*[2] of the southern and *D. m. piger*[3] of the northern Bahama Islands. In 'The Auk,' XXII, April, 1905, pp. 124–126, Mr. Allen has shown that *piger* and *maynardi* intergrade, but it seems that neither one intergrades with the mainland *auduboni*. (The name *Dryobates maynardi piger* (Allen) is more nearly correct than *Dryobates villosus piger* Allen, if we would fulfil the requirements of "the test of intergradation for subspecies." However, having recognized the subspecies, it is to be admitted that the combination is really of minor importance.)

Viewing the Hairy Woodpeckers as a whole we see that there are certain variations in the structure of the birds corresponding to certain regions. Why these variations exist we cannot say with certainty. It is probably through natural selection and the survival of those best fitted to escape from enemies or to obtain food in the particular region that they inhabit, but why a profusely spotted bird can get along better in certain localities than in others, and a large bird can get along better in the north than in the south is hard to say.

Taking up the lines of variation separately we have first, the Spotting: —

It is plain that the spots on the inner webs and proximal ends of the feathers are more persistent. So we might reason that the western bird is more highly developed, as follows: that the spots so common among the Woodpeckers were originally developed for some good service, as for directive markings, etc.; but to make the bird less conspicuous while climbing up dark colored tree trunks, the white on the outside of the closed wing was greatly reduced.

[1] Osgood, N. Am. Fauna No. 21, 1901, p. 44.
[2] Ridgway, Manual N. Am. Bds., p. 282 (1887; see Cory, Auk, 1886, p. 375).
[3] Allen, Auk, XXII, 1905, p. 124.

Thus not only would the bird more nearly resemble the background, but the attractive feature of large white spots on black feathers would be done away with. To reduce the white on the closed wing it was only necessary to eliminate the spots from the exposed portions of the feathers, namely the outer webs and the ends of the flight feathers and coverts, for the inner web of each flight feather is covered by the outer web of the preceding feather and only the distal ends of the coverts are exposed. This is just what we have in the Western Hairy Woodpecker wing. The spots on the outer webs of the secondaries are reduced to a single one at the base of each feather, which is always hidden by the greater coverts. The spots on the exposed parts of the greater coverts are reduced in number and size, or more commonly are entirely absent, and the spots on the median coverts are either absent or reduced to a mere streak. Several spots on the outer webs of the primaries still persist but they are fewer in number and are much reduced in size and are consequently very inconspicuous.

When the bird is in flight it does not need this protective coloration but probably does need the spots for the same purposes for which they were originally developed, and we find that nearly all of the spots on the parts of the wing that were unexposed when it was closed, namely those on the inner webs of the flight feathers, are still retained. The inner web of the secondary has lost only the outermost spot, and the inner web of the primary the three outer spots, but these were the smallest spots in the eastern bird and of the least importance. When the bird flies, the wing is thrown up as often as down, and the striking contrast of white and black is about, though not entirely, as effective as before to all observers except those that may be directly overhead.

Thus we have the least possible contrasting shades on the bird at rest combined with the greatest possible contrasts on the bird in flight, and given that the contrast in flight is of use to the bird, then this combination is an advantage and was developed as such.

Could this theory be absolutely proven we would still have to explain why all of the Hairy Woodpeckers have not developed in like manner. If we draw a geographical line between light and heavily spotted forms this line would in part coincide with the geographical line between the Arid West and Humid East. But I

greatly doubt if aridity and humidity has anything to do with the wing spotting. We might say that the more highly developed form has had more enemies and more competition, but such a statement needs yet to be proven.

As for the darkening of some colors of birds, it has been said that it is an advantage in any humid region where there is a great deal of shade. So we find the range of the darkest woodpecker (*D. v. harrisi*) exactly coinciding with that region of North America which has the greatest total shade, namely the Pacific Humid Coast Belt. *D. v. jardini* is said to inhabit an extremely humid region in southern Mexico, but scarcity of data from that region prevents forming definite conclusions in regard to it.

If we draw geographical lines separating forms of equal size, these lines will nearly coincide with parallels of latitude. Very likely either the more rigorous climate of the north has eliminated all birds except the larger and hardier, or else there is a direct physical effect on the individual causing it to grow larger.

It is a strange fact that the Downy Woodpeckers vary exactly as the Hairy in size, wing spotting and coloration, and for every continental form of the Hairy Woodpecker north of Mexico there is a corresponding form of the Downy. In Mexico the latter is not found.

AVERAGES OF MEASUREMENTS (IN MILLIMETERS) OF THE FORMS OF *Dryobates villosus*, TAKEN ONLY FROM SPECIMENS EXAMINED BY THE AUTHOR.

Form	No. of Specimens	Sex	Tarsus	Toe	Claw	Tail	Wing	Bill
D. v. leucomelas	5	♂	24	18.5	10.5	82	129	33
" " "	4	♀	25	18	10.5	79	128	33
D. v. villosus	6	♂	22.5	18	10.5	79.5	125	33
" " "	6	♀	21	17	10	76	121	29
D. v. audubóni	2	♂	21.5	17.5	10	64.5	113	29.5
" " "	1	♀	20.5	16	10	68	115	29
D. v. harrisi	23	♂	23.5	18	10.5	79	128	32
" " "	20	♀	23	18	10	80	124	31.5
D. v. hyloscopus[1]	43	♂	23	17.5	10	78	126.5	33.5
" " "	14	♀	22	17	10	77	123.5	30
D. v. hyloscopus[2]	30	♂	22	16.5	10	75	124	32
" " "	17	♀	21.5	16	9.5	75	122	28
D. v. monticola	5	♂	23.5	17.5	10.5	83.5	132.5	34.5
" " "	2	♀	21.5	16	10	85	130	—

[1] California north of 35° N. Lat.
[2] Except California north of 35° N. Lat.

NOTES ON THE BIRDS OF CAPE BRETON ISLAND.[1]

BY CHARLES W. TOWNSEND, M. D.

THE following notes on the birds of Cape Breton were made during a visit to that island between the 17th of August and the 5th of September, 1905. This region has already been visited in summer and its birds noted by Dr. J. Dwight, Jr.,[2] F. H. Allen,[3] and the late Frank Bolles.[4] Dr. Dwight and Mr. Allen confined their observations to the Bras d'Or region.

My own trip was by water to the island and through the Bras d'Or Lakes, and on foot from South Gut near Baddeck, "down north" as far as Neil's Harbor; also by boat from Ingonish to Sydney, and up the Myra River, with a drive through the eastern part of the island.

Ninety-eight different species of birds were noted; a number of which at this late date were of course migrants. The following twenty-one species may be added to the lists above referred to.

Cepphus grylle. BLACK GUILLEMOT.— Common along the shore from Englishtown to Neil's Harbor.

Larus marinus. GREAT BLACK-BACKED GULL.— A not uncommon migrant.

Larus delawarensis. RING-BILLED GULL.—One on the beach at Ingonish.

Sterna paradisæa. ARCTIC TERN.— Common everywhere along the shore. At South Bay, Ingonish, out of eight Terns, six appeared to be of this species, two *S. hirundo*. Dr. Dwight[5] corrected his first note of this species as all his specimens proved to be *S. hirundo*.

Puffinus gravis. GREATER SHEARWATER. **Puffinus fuliginosus**.—SOOTY SHEARWATER.— Four of the latter and one of the former were seen at sea south of the island, the numbers of the two species being in inverse order to their usual proportion.

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[1] Read before the Nuttall Ornithological Club, December 4, 1905.
[2] Auk, Vol. IV, 1887, p. 13.
[3] Auk, Vol. VIII, 1891, p. 164, and Vol. XII, 1895, p. 89.
[4] From Blomidon to Smoky. Boston, 1894.
[5] Auk, Vol. VI, 1889, p. 186.

Oceanodroma leucorrhoa. LEACH'S PETREL. **Oceanites oceanicus.** WILSON'S PETREL.— Petrels, apparently of both species, were seen at a distance off the Nova Scotia coast south of Cape Breton.

Sula bassana. GANNET.— An adult flew directly over the steamer half way between Ingonish and Sydney on September 1. Several were seen south of Cape Breton on August 17.

Phalaropus lobatus. NORTHERN PHALAROPE.— Several were seen at sea south of the island on August 17.

Actodromas fuscicollis. WHITE-RUMPED SANDPIPER.— Several were seen at Ingonish.

Calidris arenaria. SANDERLING.— Two were seen at Ingonish.

Numenius hudsonicus. HUDSONIAN CURLEW.— One seen at Ingonish.

Squatarola squatarola. BLACK-BELLIED PLOVER.— A flock of 14 were seen at Englishtown on August 21.

Accipiter velox. SHARP-SHINNED HAWK. **Accipiter cooperi.** COOPER'S HAWK. **Buteo lineatus.** RED-SHOULDERED HAWK. **B. platypterus.** BROAD-WINGED HAWK.— One of each of these species of hawks was seen.

Pinicola enucleator leucura. PINE GROSBEAK.— Two adults and two young were watched within a few yards near Neil's Harbor on August 27. The female was feeding the young.

Passerella iliaca. FOX SPARROW.— I saw one individual of this species at Neil's Harbor on August 26.

Passer domesticus. ENGLISH SPARROW.— W. P. Coues[1] reports that this species "made its first appearance in Cape Breton coincidently with the completion of the Cape Breton Railroad, during the month of November last [1889]". I found it abundant at towns along the railroad, as at Hawkesburg, St. Peters, and Sydney. It was also abundant at Baddeck, Englishtown, and at Sandy MacDonald's at the mouth of French River. Fortunately it did not seem to have extended north of that point, and may Smoky long block its way!

There were eighteen species recorded by Dwight, Bolles or Allen which I did not see, namely: *Clangula clangula americana, Harelda hyemalis, Oidemia deglandi* (the entire absence of Scoters along

[1] Auk, Vol. VII, 1890, p. 212.

the coast even during the latter part of my visit in September seemed to me strange), ?*Rallus virginianus*, *Philohela minor*, *Coccyzus* sp.?, *Picoides arcticus*, *Sphyrapicus varius*, *Antrostomus vociferus*, *Trochilus colubris*, *Empidonax minimus*, *Pœcetes gramineus*, *Melospiza georgiana*, *Zamelodia ludoviciana*, *Dendroica castanea*, *Seiurus noveboracensis*, *Wilsonia pusilla*, *Hylocichla guttata pallasii*.

I also failed to find *Compsothlypis americana usneæ* and *Melospiza lincolni*, both recorded at Cape Breton by Mr. Wm. Brewster[1] in his 'Notes on the Birds observed during a Summer Cruise in the Gulf of St. Lawrence.'

The following notes are added on several species previously reported for the Island.

Chætura pelagica. CHIMNEY SWIFT.— The houses outside of the large towns at Cape Breton are generally very poorly supplied with chimneys. In fact, brick chimneys are rarely seen, but small stovepipes are used. Chimney Swifts, which are common, have therefore to adapt themselves, and I was told that it is usual for them to nest in barns and sheds. At French River, close to the sea, I observed on August 22 a Swift flying in and out of a window in a small hay barn. Inside on the end wall opposite the window and close under the apex of the rafters the nest was fixed and it contained the half-grown young. The nest was a rather bulky affair, made of spruce twigs, and the glue-like substance with which the twigs were stuck together was smeared like varnish on the boards above and below the nest. Below the nest was a large pile of droppings, as if the place had been used for several years. This accumulation was added to from time to time by the young, who carefully disposed themselves so as to avoid soiling the nest. When the adult bird flew in with food, chirping loudly, there was a loud reply from the young. The old bird generally alighted on the wall below the nest, clinging in a vertical position, and later fluttered up to the edge of the nest where it fed the young. The shrill twittering of the young was almost deafening in the small hay loft. The next morning early I found both parents at the nest, one on the wall, the other sitting on the nest, spreading one wing at times, and brooding the young.

[1] Proc. Boston Soc. Nat. Hist., Vol. XXII, 1883, p. 364.

Corvus brachyrhynchos. AMERICAN CROW.— In 1881 Mr. Brewster[1] was impressed with the familiarity of the Crow with man in these regions, owing to the fact that, as no corn is planted, there is no cause for dispute. Along the roads, in farm yards and even in remote places at Cape Breton one may walk within a short distance of crows. At Grand Narrows I was interested in watching a crow on a fence within 20 yards of me pick a chicken bone. He held the bone with his foot during the process but flew off with it in his bill. It is common for crows to alight on buildings, and I once saw four together on the roof of a small outhouse at Ingonish. In eastern Massachusetts such familiarity would be very surprising.

Corvus corax principalis. NORTHERN RAVEN.— Along the northeast coast of Cape Breton, between Englishtown and Neil's Harbor, I found Ravens fairly common. Four or five were seen nearly every day. In searching for some good field mark to distinguish this species from the Crow, I found that the shape of the tail was diagnostic. The tail of the Crow when spread, or partly spread is evenly and but very slightly rounded, for the length of the outer feathers is nearly the same as that of the middle ones. In the Raven, however, the middle feathers are noticeably longer than the outer, and the gradation between the two or four middle feathers and those outside is especially marked. I found that the tail of a *Corvus*, once well seen, always showed definitely whether the bird was *corax principalis* or *brachyrhynchos*, and the *croak* or *caw*, if afterwards heard, always confirmed the diagnosis. The harsh croak of the Raven is of course always diagnostic. I have noted it as *crrroak*, *crrraa* and *crrruk*, and once near the top of Smoky I was startled with a coarse cry that sounded like *helup*. As is well known, the larger size of the Raven is of but little help in distinguishing the two species, unless they are near together for direct comparison. Neither is the greater tendency of the Raven to sail or soar conclusive for this purpose, for Crows at times disport themselves in similar fashion.

The road to Ingonish winds along near the summit of Mount Smoky, and gives an unobstructed view into a huge ravine which

[1] *Loc. cit.*

nearly divides the great rocky mass into two parts, the sea lying close at hand on the east. This is a favorite resort for Ravens, and one can look down on the great birds showing glossy and purplish in the sunlight as they sail from one side of the ravine to the other. A couple of these birds sailed over this ravine, one close above the other, and as I watched them with my glasses, the lower bird turned completely on its back and both birds grappled for an instant in mid air. Later at Ingonish I saw a similar performance, but in this case the upper bird dropped its feet first, and the lower at once turned over to grapple with it.

At French River one morning I watched four Ravens performing some interesting evolutions about the cliffs. Each in turn or together would fly up almost vertically against the wind, and then swooping or darting down turned at times a complete somersault. That evening four Ravens, possibly the same birds, flew by hoarsely croaking and sailed off to the woods beyond the river.

Loxia curvirostra minor. AMERICAN CROSSBILL. **Loxia leucoptera.** WHITE-WINGED CROSSBILL.—Both species of Crossbills were abundant everywhere in the island, owing probably to the abundance of food, for the black and the white spruces, particularly the latter, and the balsam firs, were loaded with cones. The natives said it was an unusually abundant crop.

The American Crossbill sang but rarely and then with but little enthusiasm, but the white-winged species was everywhere in full song. One of these I shot and found the testes as large as peas. This and the singing certainly suggested breeding. I saw no fledglings and had no time to look for nests. The great variation in the time of breeding of Crossbills is well known, but it is certainly strange to think of these birds breeding in late August and early September.[1]

Ora W. Knight[2] in speaking of the American Crossbills seen at Jackman, Maine, from August 16–23, 1895, remarks: "What is very odd is the fact that I observed a number of the birds flying about in pairs. These were probably still nesting. Some of the Crossbills probably nest much later than is generally supposed."

[1] *Note.*— Mr. Brewster tells me that he once found evidence of Crossbills breeding at Lake Umbagog in September.

[2] Auk, Vol. XII, 1895, p. 391.

The song was frequently ringing in my ears, and it is a song that is well worth recording, especially as most writers give such an imperfect idea of it. Wilson, Nuttall, Minot, Stearns and Coues, Langille, and Hoffmann do not mention it. Audubon says: "Its song is at times mellow and agreeable." Baird, Brewer, and Ridgway say of captive birds that "their songs were irregular and varied, but sweet and musical." Brewster[1] in his 'Notes on the Birds observed during a Summer Cruise in the Gulf of St. Lawrence' says: "The old males occasionally uttered a feeble, trilling song very like that of the Snowbird." Chapman says: "Their song is low, soft, and sweet, much like that of the American Goldfinch." G. M. Allen in his 'Birds of New Hampshire' says: "The song which I have sometimes heard in July is a series of trills alternately high and low."

The last is the best description of the song as I heard it at Cape Breton. The trills resembled so closely those of the Canary-bird, that several persons who heard it spoke of the bird as the "Wild Canary." Far from being low and feeble, the song was delivered with great vigor and abandon, the birds often flying about in large circles over the woods. Occasionally the song was delivered from the top of an evergreen, but usually its vehemence was so great that the bird was lifted up into the air, where it flew about slowly, pouring out meanwhile a great volume of music. This lasted for minutes at a time, and ceased only when the exhausted bird came to a perch. The song would often be at once taken up by another bird, and occasionally several were singing in the air at a time.

The volume of the sound was constantly swelling and dwindling, at times a low sweet warbling, then a rough rattling, more like a mowing-machine, then a loud all-pervading *sweet, sweet, sweet,* recalling exactly a Canary-bird. Anon the song would die down to a low warbling, and again burst out into a loud sweet trilling *whee, whee, whee.*

When singing from a perch, which was always the tip-top of a spruce or fir, the Crossbill frequently twitched its tail, and erected the feathers of its crown. One fairly good singer appeared to be rather immature, being mostly gray with but a faint tinge of red

[1] *Loc. cit.*

in the breast. This full nuptial song is certainly very different from the song occasionally heard at other seasons, and would hardly be recognized by one who had heard the latter only.[1]

The American Crossbill, on the other hand, rarely sang. Occasionally one might hear the call-notes so rapidly repeated that they resembled a trilling song. One bird emitted this song as it flew, following it up by several high, quickly repeated squeeky notes.

Parus hudsonicus. HUDSONIAN CHICKADEE.— It is as easy to distinguish this bird by its notes from the familiar Black-capped Chickadee, as by its plumage. There are, however, very few descriptions in the books of these characteristic notes, and I can find no account of a song. Both Chickadees have a variety of faint notes that are very much alike, but there is one characteristic in most of the notes of the Hudsonian which at once distinguishes it from the Black-cap, and that is the *z* quality, delivered in a lower pitch. In a word, the Hudsonian uses *z* while the Black-cap uses *s* or *d*. The former says *pst zee-zee* or less often *pst zee-zee-zee*, while the latter repeats more frequently, and rattles off, *psik a dee-dee-dee-dee-dee*, and his notes are higher pitched.

Several times in different places I was treated to a pleasant little warble from the Hudsonian Chickadee, which appeared to my companion and myself to easily merit the name of song. It was a low, bubbling, warbling song, which I vainly attempted to describe in my notes. It began with a *pstt* or *tsee*, followed by a sweet but short warble. This song, if song it be, is quite different from the irregular rolling notes that the Black-cap occasionally emits, which cannot be considered a song. In one case I noted that the song was emitted by an adult. I heard the song several times from one bird at Englishtown, several times from another at Indian Brook, once at Skir Dhu, and once at North Ingonish. It is evident therefore that it was not the idiosyncracy of one bird. While it would seem strange that the Hudsonian Chickadee should not have a song, it is stranger still that those who are familiar with the bird at all seasons should not have heard it, if it exists. As far as I know the only allusion to a song in this species is by Mr. Horace W. Wright

[1] Since this was written, my attention was called to a very similar description of this glorious song by Olive Thorne Miller in her 'With the Birds in Maine' (Boston, 1904), pp. 10 to 12.

in the Auk, Vol. XXII, 1905, p. 87, in which he refers to a Hudsonian Chickadee seen at Ipswich, Mass., on November 12, 1904, as follows: "[he] was very finely seen while he gave a sweet warbling song." Of another bird, seen on November 25, he says: "The Belmont bird was also well seen and gave a few notes of the warbling song."

STRAY NOTES FROM ALASKA.

BY A. W. ANTHONY.

As EVEN fragmentary notes on the avifauna of northwestern Alaska are by no means common I have ventured to offer the few disjointed records which I noted during the winter of 1904–1905 on the Seward Peninsula. These records are from a region somewhat closely adjoining those so well covered by Messrs. Nelson and Grinnell, and I would hesitate were it not for the fact that the country explored by myself is almost entirely open tundra, differing from the St. Michaels region or that of Mr. Grinnell's camp on Kotzebue Sound. The Seward Peninsula is more or less timbered along the streams and mountains of its eastern part but the spruce growth ceases abruptly between Long. 163° and 164°, west of which nothing larger than arctic willows are to be found, save for one or two small groves of stunted cottonwoods, which will be mentioned more in detail further on.

After the fall migration the Redpolls lingered along the willow thickets until I had hopes that they would winter with us, for I could not see any possibility of any other winter residents except the Ptarmigan. A march of over a hundred miles in early October failed to bring to light any other species but by October 15 the last Redpoll had departed for the timbered regions along the Yukon, leaving the tundras and wind-swept hills to the Rock and Willow Ptarmigan, large flocks of which had appeared by October 1, in more or less advanced winter dress.

On October 26 I saw the first Snowy Owl; though the species is said to nest all over the peninsula, I did not meet with any until then, when I found them common near the base of the Kigulik Mountains, about 20 miles from the coast. Very little snow had fallen up to this time and the wind-swept hummocks offered ideal watch towers where at nearly any hour of the day two or three owls could be seen, certain favored elevations being scarcely ever without a tenant on the watch for a luckless mouse or lemming. As the snow became deeper mice were harder to catch, and owls correspondingly scarce, so that by December 1 they were nearly or quite all gone.

On November 20 I heard a Chickadee on the upper Cripple River, and a month later another lisped his cheery notes to me from a stunted bunch of willows on Penny River as I journeyed toward Nome. This was, with the exception of a few Willow Ptarmigan, the last bird I saw for two months.

Early in February I arranged with an Eskimo to accompany me on a sledge journey to Cape Prince of Wales, thence north into the Arctic as far as caprice might carry us, returning to Nome only when travel with dogs was no longer practicable—late in May as it subsequently proved.

Off Grantley Harbor, at the edge of the shore ice, a large gull was seen February 20. It was following an open lead along the edge of the ice pack, so far away that its identity could not be ascertained.

As the natives at Cape Prince of Wales reported no game to be found to the north along the coast it was considered advisable to follow up some of the rivers tributary to Grantly Harbor or Port Clarence further east.

On March 1, at Port Clarence, a flock of a dozen Snowflakes marked an epoch in the trip. They were on the wind-swept sandspit, the only spot of bare earth I had so far seen on the trip, and, to keep from being carried away by the gale then blowing, were lying almost flat on the sand and behind frozen hummocks of snow.

On March 3 a Richardson's Owl was caught on the Agapuk River. It had taken up its quarters in an abandoned igloo, and when driven into the glare of the outer world was confused, and after a short flight returned to the igloo and submitted without protest to capture. From an inspection of several deserted igloos

in the interior of the peninsula I concluded this species was a regular winter resident and made general use of these shelters. During the month of March two or three Richardson's Owls were seen, all in the thick willow growth along the Kruzitrin River.

A few *Parus* were found at long intervals in the willows; their presence being usually announced by their call, and it was not often that one could be seen near enough for identification. I think that all I saw were *P. cinctus alascensis.*

Extending up from Grantly Harbor, toward the northeast, is an extensive basin but very slightly elevated above the sea. The tides are noticeable 75 miles by the river from the head of Grantly Harbor, and with a south wind the waters are distinctly salt even thus far from the coast. Running back from the several rivers which drain into this basin are numberless sloughs and bayous, forming a network of water ways, a veritable swamp in summer, well nigh impassable, but furnishing ideal nesting grounds for water birds, while the thickets of willow and alder growing over a large part of the dryer ground furnished better cover for land birds than I met with in any part of the peninsula. Flanking this region on the south is the Kigulik Mountains, their ragged peaks rising abruptly to elevations ranging from 3000 to 4700 feet and extending about 60 miles east and west. At the base of the range, on the north side, are found several hot springs within an area of a few acres, and surrounding them a growth of cottonwoods of perhaps a mile in extent. In this region I camped several times and found more bird life than in any part of the region covered. As the Eskimos assured me that about the warm springs the water fowl are first seen in the spring migration, I returned to this point to watch the arrivals as late as I safely could and return across the mountains before the ice broke up in May. Most of my time was spent along the northern base of the Kigulik Mountains, and the valleys of the Krugamapa and Kruzitrin Rivers.

Two or three Redpolls were seen and heard singing March 7 in the willows along the Kruzitrin, and on the same day two Hawk Owls were recorded. These arrivals marked the first of the spring movement, but it was several weeks before any real migration could be said to have commenced. Redpolls became gradually more common, coming in flocks by April 15. It was not until April 12

that the first Snowflakes made their appearance at the base of the Kiguliks, and then but a pair were seen, twittering a suggestion of their spring song; they became abundant but little later than the Redpolls. On March 27 a *Dryobates*, of the size of *pubescens*, was seen among some dwarf willows at the base of the Kiguliks and was the only representative of the order that I met with at any time. The same day I saw a Golden Eagle, and from inquiry of the Eskimos learned that the species is resident but not common.

On several occasions between March 15 and May 1 Gyrfalcons were seen along the bayous and sloughs, where they were doubtless hunting Willow Ptarmigan. They were by no means wild but maintained a discreet distance. The natives state that along the Tuxsuk River, connecting Salt Lake with Grantly Harbor, "white" Gyrfalcons nest quite commonly, feeding on the water fowl that nest about Salt Lake.

On May 3 a Rough-legged Hawk was noted at the hot springs, and on the 23d, while en route to Nome, I found a nest that had been despoiled of its three fresh eggs by a prospector the day before. The nest was a bulky structure of sticks on a ledge, but quite accessible. In the cottonwoods about the hot springs were many hawk nests but up to the date of my leaving the only species seen other than the above was a single Marsh Hawk on May 8.

The Eskimos assured me that the first water fowl to arrive would be the geese which, regardless of weather, would be seen within a day or two of May 1. It was therefore with considerable interest that I watched the open water below the hot springs. May was ushered in with a thermometer 25° below zero, and as much snow and ice as at any time during the winter. Some bare tundra could be seen where an April thaw had promised an early spring, but otherwise winter reigned supreme. It was clear that since the only open water was at my station, early water fowl must sooner or later report in my region. The bad weather continued, however, until the 6th when the north wind abated somewhat and in the A. M. three geese, of the size of Hutchins's came in from the west and alighted after circling the pond. Another was reported the same day as passing on to the north. No others were seen until warmer weather set in, on the 10th, when migrants fairly swarmed. At 11 A. M. two Whistling Swans arrived from the west, and after

some minutes spent in circling the pond disappeared in the north. A little later large flocks of Little Brown Cranes began to arrive from the east and passed on toward Cape Prince of Wales. All the rest of that day they were passing by and the air was filled with their bugle-like notes. With them came flocks of geese, numbering each from four to twenty-five. Many of the geese came from the west, suggesting the possibility of their having come from Siberia.

Most of the flight seemed to be *Branta canadensis minima*, but a few *Anser albifrons gambeli* were noted as well. Each flock of geese, on arriving, made direct for the open water but after being disturbed they retired to the open spots on the tundra or lit on some of the many frozen lakes. This date also brought us the first gulls; several, the size of the California Gull, lit on the ice or hovered over the open water but were so wild that they could not be identified with certainty. Wilson's Snipe also was noted for the first time on the 10th and rapidly became common.

On May 11 a Robin was heard singing. At the pond I found a flock of ducks, consisting of Pintails, Green-winged Teal, and Scaups. Three Least Sandpipers were probing the mud for their breakfast. Later in the day flocks of *Tringa* and *Larus* arrived from the east. In a small cottonwood near the hot spring a nest of the Northern Shrike was found with seven fresh eggs. The nest was large and bulky, composed of sticks and twigs outwardly, somewhat loosely put together; inside of fine dry grass, lined with a large quantity of the pure white feathers of the ptarmigan, which gave to the structure a most artistic effect.

On the 12th Robins were plenty, and Tree Sparrows had also arrived in numbers. The flight of water birds had somewhat abated though but few ducks had arrived. The geese had paired and were looking into the merits of the nesting sites offered in the open spots on the tundra. After I reached the coast I learned that this region was visited by heavy and prolonged rains that so swelled the streams that a large part of the nesting water birds were driven from their nests; the geese gathered in flocks and were said to have made little or no attempt to raise a brood.

On the southern slopes of the Kigulik Mountains I met with the first Fox Sparrows and Golden Plovers on May 16, and the following day noted the first Titlarks and Red-backed Sandpipers. The

18th brought the first Lapland Longspurs and Golden-crowned Sparrows, and the 21st the first Parasitic Jaeger. On the 22d a number of Golden Plovers arrived in pairs, their mellow calls sounding from every side as they sought the bare spots on the tundra or chased each other over the snow drifts. One Wandering Tattler also arrived on this date.

One Bristle-thighed Curlew was seen on the head of the Nome River on the 23d. Here also I met with quite a flight of Hawk Owls migrating northward. At no time during the day were they absent from the landscape, and often five or six were seen at one time.

On May 24 I took a nest and set of four eggs of the Hoary Redpoll, from a leafless arctic willow that reached but two feet above the snow. The eggs were so far advanced in incubation that they could not be saved. No attempt has been made to tabulate the migration further than to note the arrivals in a general way. As a rule I think the land birds became abundant a day or two after the first arrival was noted. There was, however, a straggling band that brought up the end of the procession long after the movement had to all appearances ceased, as was attested by my finding a number of Lapland Longspurs on each of several days spent with the Eskimos hunting walrus in the ice pack fifty miles or more south of the peninsula.

ON A NEW FORM OF *OCEANODROMA* INHABITING SAN BENITO ISLAND, OFF THE COAST OF LOWER CALIFORNIA.

BY HANS GRAF VON BERLEPSCH.

Oceanodroma monorhis chapmani *Berl.*

O. O. monorhis dictæ valde affinis sed alis multo, cauda tarsisque paulo brevioribus, rostro longiore, necnon corpore supra nigrescentiore, minus griseo lavato, distinguenda.

Al. 149–147 caud. 77–76 culm. 28¾–28¼ tars. 22½–22 mm.

Habitat in insula San Benito dicta, maris pacifici Californiæ inferiori proxima.

Typus in Mus. H. v. B. (♂ San Benito Isld.).

In the year 1899 I received through Mr. H. W. Marsden of Clifton, Bristol, a number of rare North American birds, which he had to sell in commission for Mr. C. K. Worthen of Warsaw, Ill., whose firm name is to be found printed on the labels. From this consignment I picked out several specimens of Petrels belonging to the genus *Oceanodroma*, collected in the San Benito and Guadelupe Islands off the coast of Lower California. They bear labels in a handwriting I do not know. These *Oceanodroma* are evidently referable to three different species, viz.:

1. *O. macrodactyla* W. E. Bryant from Guadelupe Island, a large species with partly white upper tail coverts.

2. *O. melania* (Bp.) from San Benito Island, a large species of nearly uniform blackish coloration, but with whitish brown apical borders to the upper wing coverts. Erroneously labelled as *O. socorroensis*.

3. A species evidently closely allied to *O. monorhis* (Swinh.), but erroneously labelled as "*O. melania.*" From the latter the two specimens from San Benito Island now in my collection differ in their much smaller size and in having the front, face and chin suffused with grayish slate color instead of being uniform with the rest of the body, also in the back being paler and of a more brownish black. Otherwise the coloration in these two birds is the same as in *O. melania*.

They are labelled as follows: *Oceanodroma melania,* San Benito Island, Lower California, July 14, 1897. "♂" and "♀" respectively, numbers 1770, 1763.

When at London last year by the kindness of the Hon. Walter Rothschild, I had an opportunity to compare my small so-called *O. melania* with specimens of *O. monorhis* Swinh. from Amuria in the Tring Museum. I found them to be closely allied to *O. monorhis,* but differing from it in their much shorter wings, also somewhat shorter tail and bill, and in their darker and less grayish upper parts.

O. monorhis had not yet been mentioned as occurring in San Benito Island, or elsewhere on the coast of California. The new form as described above is evidently the American representative of that Asiatic species.

While participating in the fourth International Congress at London, I had also the good fortune to show my birds to Mr. Frank M. Chapman of New York. Mr. Chapman having satisfied himself of the distinctness of this new form, I have great pleasure in naming it after a distinguished authority on North American birds.

THE STATUS OF THE "SAN FRANCISCO TITMOUSE."

BY JOSEPH GRINNELL.

TOWARDS the latter part of 1903 a new form of the Plain Titmouse was described[1] under the name *Bæolophus inornatus restrictus.* It was based upon specimens from a suspiciously restricted locality, namely the vicinity of Oakland, California. Without any apparent hitch the A. O. U. Committee on Nomenclature published[2] its acceptance of the alleged subspecies just nine months

[1] Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, p. 109.
[2] Auk, XXI, July, 1904, p. 418.

later, a much quicker decision than is usually accorded western novelties! The matter has since rested, apparently for the reason that no one has had the inclination or opportunity for verifying the validity of the race.

In 1845, Gambel described[1] his *Parus inornatus* from "Upper California," and two years later announced[2] that Monterey was the place of discovery.

The neighborhood of Monterey was thus established as the type locality of *Bæolophus inornatus inornatus*. Monterey is in the southern portion of what I have elsewhere called the Santa Cruz "District" or Faunal Area. Many humid coast races find in Monterey County the southern limit of their distribution; to the northward their range spreads interiorly to include the "San Francisco Bay Region," excepting the salt marshes. Such races are *Toxostoma redivivum redivivum*, *Thryomanes bewicki spilurus*, and *Chamæa fasciata intermedia*. Excluding the Song Sparrows and Yellow-throats, which are differentiated into local races by the fresh water and salt marsh sets of influences, I had so far failed to detect differences between any birds of the coast and those of the narrow district lying between the east shore of San Francisco Bay and the Mt. Hamilton Range (termed Berkeley Hills at the north). And I could not see why the Plain Titmouse should present a conspicuous exception.

In September, 1904, I examined the extensive series of *Bæolophus* in the Academy of Sciences collection at San Francisco, and among these, several skins (but not all) from Oakland presented the "dark" coloration, which is given as the sole character of *restrictus*. I also examined other species from the neighborbood of Oakland and Alameda with the significant result that a number of birds of that limited locality seem prone to dark or leaden shades of coloration. This has been remarked[3] upon by McGregor who gives several cases, and I can add to his list Green-backed Goldfinch, Willow Goldfinch, and now the Plain Titmouse!

The upshot of the matter is that I feel convinced that the name *restrictus* was based on specimens of the ordinary *inornatus* in

[1] Proc. Ac. Nat. Sc. Phila., Aug., 1845, p. 265.
[2] Proc. Ac. Nat. Sc. Phila., Feb., 1847, p. 154.
[3] Condor, II, Jan. 1900, p. 18.

some manner adventitiously colored. The prevailing westerly winds, charged with the gases, soot and dust from the manufacturing bay-shore districts of San Francisco, sweep across the bay and up over the cities of Alameda and Oakland, with their added contributions, to the hills beyond. It seems to me probable that feathers may be soiled by this dirty atmosphere like the shrubbery and buildings in the same locality.

Mr. W. O. Emerson has kindly loaned me his series of 12 skins of *inornatus* from Haywards. This place is only 14 miles southeast of Oakland, the type locality of *restrictus*, but not one of them shows the character of that alleged form. I cannot distinguish these from 15 specimens collected by myself at Palo Alto, 17 miles further south across the bay, nor from 4 skins submitted to me by Mr. H. O. Jenkins who obtained them the past summer in Monterey County. For the want of skins from the immediate vicinity of Monterey we may safely consider the latter, from the headwaters of Big Creek in the coast district south of Monterey, as typical of *Bæolophus inornatus inornatus*. Among all these specimens, when seasonal changes are carefully accounted for, there appear to be no locality differences.

In view of the above considerations, ecologic and otherwise, I would urge that the so-called "San Francisco Titmouse" be no longer recognized as a phylogenetic race.

Pasadena, Cal.

THE FLORIDA GALLINULE NESTING ON LONG ISLAND, NEW YORK.

BY WILLIAM C. BRAISLIN, M. D.

THE previously accepted status of the Florida Gallinule (*Gallinula galeata*) has been that of a rare migrant in the vicinity of New York City. It may, however, be properly classed as a locally common summer resident. It cannot be claimed that its breeding has not heretofore been suspected. The Messrs. W. F. and John Hendrickson, whose ornithological collecting has brought to light a number of valuable bird records, notices of which have appeared in 'The Auk', have had an unverified record of a Gallinule breeding in the Long Island City marshes of several years standing. This record will be referred to presently.

The generous assistance of the Messrs. Hendrickson, first in directing my attention to the unpromising region situated near the center of Long Island City, and likewise their direct coöperation and assistance in my investigation, have made it possible to establish the fact of the Gallinule's nesting here. More than two years ago Mr. William Dutcher courteously directed the attention of the writer to this region as one which might be profitably investigated; he, in turn, having received his information from the Messrs. Hendrickson.

A letter received from Mr. W. F. Hendrickson at that time, in reply to my questions, contains information which led to my exploration of the region. The following is a quotation from it: "In regard to the Florida Gallinule nesting more or less regularly in Long Island City, I beg to say that I believe that at least one pair has nested in the ponds along Judson Avenue and the Long Island Railroad tracks, near the Queens County Court House, for seven or eight years past. I believe also that the Coot has bred there. My brother and I have taken specimens of both Coot and Gallinule, and some years ago my brother found a nest, which contained seven or eight eggs, we believed to be that of the Gallinule, but, for some reason which I have forgotten, the eggs were not taken. My recollection is that I wanted to either see the birds at close range or to shoot one of them as a positive means

of identification, and that we let it go until too late; and since then we have never searched for the nests, although we heard the birds during the spring and summer months. Our attention was first attracted to them by the noise they made. They have a harsh, strident call, and sometimes it could be heard all evening and well into the night. Investigating to ascertain the cause of it, we saw that it was a large, dark-colored bird, which I took to be the Gallinule. I asked my brother about his recollection of the facts, and he said that the principal thing he remembers is this: the birds he saw had a bright red lump on the front of the head. This would indicate that it was the Gallinule. It is certain that the birds seen were either Gallinules or Coots and, as previously stated, I think both have bred there. The ponds in which they breed are deep, with muddy bottom and overgrown with cattails. To seek the nests is dirty exhausting work and I have passed the period of enthusiasm that has led me many times to put on old clothes and literally swim through such places. Therefore the information I give may not be such as would establish a positive record but, as Mr. Dutcher can tell you, my experience is such that you may consider the information as reliable as it could be without the dead birds to prove it. The birds were in the ponds this season (1903), as I heard them on many occasions. The locality frequented by them is thickly populated and you would no doubt be astonished to think birds would breed there. However, we have taken nests of both Sora and Virginia Rails and of the Least Bittern in the same ponds."

In company with the Messrs. Hendrickson as our hosts and Mr. John N. Drake the near by salt marshes were visited in the summer of 1904, and these repaid our investigation in yielding several nests, among them one of the Virginia Rail.

The ponds where the nest was taken were likewise pointed out to us, but not explored at this time. These ponds were originally part of the salt meadows but were laid out into streets and city blocks, years ago, and the streets themselves filled in, so that they stand at a considerably higher level than the marsh land. The ponds thus formed by the intersecting streets, and having no outlets, have become partly filled with rain water so that they are now stagnant muddy pools of nearly, or quite, fresh water. The

bottoms of the ponds are composed of soft, dark, foul-smelling mud which, if not too deep under water, supports a luxurious growth of tall cattail flags. The small leaved, bright green duckweed also finds a congenial habitat here. The bottoms are irregular and not without deep holes, as we afterwards found.

The summer of 1905 proved a propitious one for investigation as it was dryer and the ponds were not so full of water, and were visited several times.

On June 21, 1905, several birds were seen, and, as we supposed, were both Gallinules and Coots, and a flat nest among the flags was located. This was empty. Mr. John Hendrickson also killed for me one of the birds that was swimming in the open water beyond the reeds and this proved to be a Gallinule.

In this specimen, a female, the largest ovule was only the size of a pea and it was believed that some days would have elapsed before she would have laid. Both Gallinules and Coots have been seen later in the season than this in previous years by the Messrs. Hendrickson, so that as yet we were in the dark as to whether the Gallinule or the Coot nested in the ponds.

The loud call of the birds could be heard in the reeds, and as nearly as we could judge each of the several ponds contained a pair of birds. Mr. Erikson, Assistant Curator of birds at the Brooklyn Institute Museum, who visited the ponds on one occasion with me, stated that the call note was apparently exactly similar to that of the Old World Moorhen (*Gallinula chloropus*). It slightly also suggests to the writer the harsh note of the domestic Guinea fowl.

On July 15, 1905, the ponds were visited in company with Mr. C. G. Abbott, and on examining the nest seen on June 21, it was still untenanted, but a few feet away there had been a fresh nest built. This had apparently been disturbed and disarranged, and just outside it we found the remains of two eggs. Their form was preserved but in one a large hole had been made, and in the other a smaller hole in the side, and much of the contents had been removed. This had probably been the work of some early-morning crow visitors.

The site of the nest was surrounded by water waist-deep, in a clump of reeds. The eggs were preserved. They are the eggs of the Gallinule (*Gallinula galeata*). No birds were observed on this

occasion in the pond referred to, but a number of birds, both old and young, were seen in adjacent ponds. Mr. Abbott explored one particularly fruitful area, and as he has kindly placed his notes at my disposal for use in this paper I make from them the following quotations:

"The spot was a triangle of reeds bounded by two branching railway tracks and an embankment built to carry a road over the marsh. It was not 100 yards in extent in any direction. By getting up on the embankment I could get a view over the whole little pond. I had hardly looked before out into an open space stalked a mother Gallinule with her brood about her, well-grown downy youngsters, black as ink. They were pecking about like a flock of chickens. Hardly had they disappeared among the reeds again than I spied another Gallinule walking leisurely about in the open, her red head [frontal plate] especially conspicuous. On entering the swamp, which was waist deep, a sharp, penetrating note like the squeak of a toy or child's doll was heard. The sound possessed no ventriloquial qualities and seemed just as close as it was, for, as I peered through the reeds I saw the bird (an adult) skulking leisurely away from me. Thereafter I had opportunities to observe several birds — at least four adults, I think, in this one small pit. I was much surprised at their tameness, for they would allow a remarkably close approach and then only moved slowly away in an insulted sort of manner, stopping very daintily and constantly flirting their tails. Among the reeds their exceedingly broad feet enable the birds to walk upon the duckweed, but in crossing an open space they swam. I saw young birds, however, which being light (those I saw thus were about the size of a Spotted Sandpiper), walk upon the duckweed even over a broad open space. In swimming the bird nods the head at each stroke, and the feet then being hidden, it looks almost exactly like an English Moorhen. The white streaks on the body, however, are quite conspicuous, and give her a (to me) strange appearance. One bird I saw swimming had the wings raised and arched over the back, something after the manner of a male swan. I soon learned that the birds possessed quite a vocabulary, though the commonest notes were the loud *keek* described above (uttered when the intruder approached too near) and a lower, clucking sound.

"I found several nests, all empty, and it was evident that we were too late for eggs. The nests were all like the very first one mentioned and composed of compactly matted reeds placed at the base of a little clump of cattails (usually slightly isolated). The beds of the nests were very close to the surface of the water and the structures were not unusually large, as is often the case with rails and gallinules. All the nests I found were close to the edge of open water, not in thick reed beds. It was in precisely such a place that I saw, from a railway train in Jersey City, my only previous Gallinule May 28, 1904."

The observation of these birds at this place which, unless our attention had been directed here, would have seemed more unlikely than the average empty city lot to yield bird "finds".

The evidence of the nest and eggs of the Gallinule collected in the ponds, the continued presence of the birds throughout the spring and summer, and the ultimate appearance of young birds, are conclusive as to the breeding of the Gallinules.

As to the Coots (*Fulica americana*) no positive evidence is as yet established beyond the fact of its presence at a late date, June 28, 1904, at the ponds, as the observation of the Messrs. Hendrickson unquestionably shows. The following quotation from Mr. W. F. Hendrickson's letter establishes probability at least that the Coots as well as the Gallinules nest in the ponds.

"On the morning of the 28th June (1904) while passing the ponds south of my house I saw two Coots. The train was going out of the yard very slowly, when my attention was attracted by a movement at the edge of a small triangular pond, overgrown with cattails. I looked, and saw a Coot standing in shallow water feeding within ten feet of the track, and it never moved as the train passed. A short distance further on I saw another swimming across some open water. The white bills stood out very clearly, and I also saw the white feathers of the wings. My identification is as positive as it could be without having the birds in hand. These birds are undoubtedly nesting there and if you care to come up again to make a search we shall give you whatever aid we can.

"In talking to my brother about the white bills being so noticeable, he said one of the birds seen by him had a very red bill. It

is, therefore, probable that both the Coot and the Gallinule breed in those ponds."

The above, it will be observed, was written by Mr. Hendrickson before our investigations of last summer (1905), and though we were then only able to establish the fact of the breeding of the Gallinules, our search was conducted too superficially and intermittently to detract from the probability that the Coot may also nest here. In fact I am very much inclined to agree with Mr. Hendrickson that the Coot also nests here, at least occasionally if not regularly; since his identification, which I regard as positive, as to its presence there on June 28, in the previous year (1904) at so late a date, must be regarded as significant.

It is hoped that this important question, which can by no means be regarded as settled definitely in respect of the Coot, may be determined during the coming season (1906), since extensive filling in of these flats has already commenced and unless the matter is absolutely decided now, it must hereafter be regarded by ornithologists as an opportunity neglected.

UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.

I.

I TAKE unusual pleasure in presenting the following letters, written by two such prominent characters, who have the love and respect of the ornithological world, and whose life and writings are ever cherished. Another point of interest is the fact that Audubon in his fifty-eighth year formed, through correspondence, the acquaintance of young Baird, then only fifteen years of age, and, appreciating the young man's ardent love for natural history, his energy and marked ability as a field collector and close observer, wrote him letters of encouragement which doubtless had a stimulating influence. These letters, representing certain periods be-

tween 1840 and 1846, show a growing friendship between their authors.

Baird made his first visit to Audubon in New York in February, 1842, and in November of the same year Audubon wrote an urgent letter to his young friend, inviting him to accompany him on his proposed trip to the Missouri River, and offering him most liberal inducements. During these years Baird was furnishing Audubon with much valuable material in both birds and quadrupeds. Some of the birds which he collected in and about Carlisle, Pa., and which are referred to in these early letters, are to-day in the Baird brothers collection in the Smithsonian Institution. This collection numbered over 3000 skins and formed the basis of the present National Museum collection.

The two species of *Tyrannula*, the subject of their first ornithological paper, are probably mentioned in these letters for the first time. A letter from Mr. Witmer Stone, relative to other correspondence on the subject of these flycatchers, to which he has had access, is so complete and to the point, that I quote in full.

"The little Flycatchers mentioned in the following letters, whose identity caused so much speculation on the part of the young ornithologists of Carlisle, are now placed in the genus *Empidonax*, one of the most perplexing groups of North American birds.

"There occur in Pennsylvania four distinct species. (1) *E. virescens*, first clearly distinguished by Vieillot, and almost simultaneously by Wilson, but subsequently for many years known by the name *acadicus* Gmelin, of very doubtful application. (2) *E. trailli*, first described by Audubon (our eastern race is *E. trailli alnorum*). (3) *E. flaviventris*, the bird described by Baird in the letter to Audubon, dated June 4, 1840, and later published under the above name. (4) *E. minimus*, the bird described briefly in the letter to Audubon dated June 21, 1841, and compared with *acadicus*, and finally published along with the other in the first volume of the 'Proceedings' of the Academy of Natural Sciences of Philadelphia, by the brothers Baird; this paper being Spencer Baird's first contribution to science.

"Swainson and Richardson had published a species of this same group under the name *pusilla*, with which the Bairds vainly endeavored to identify one or the other of their new species without

success. In fact, *pusilla* of Swainson and Richardson remained a sort of 'bug-a-boo' until Mr. Brewster finally disposed of it as unrecognizable. (See Auk, Vol. XII, p. 157.)

"The letters of Wm. Baird to his brother throw some interesting side lights on the history of these new flycatchers, and for the privilege of making extracts from them I am indebted to Miss Lucy H. Baird. William was then in Washington, but evidently kept fully in touch with bird matters at Carlisle. Under date of Aug. 24, 1841, he writes, in comment on Audubon's letter of July 29: 'I am not at all surprised that Audubon thinks the Yellow-bellied Flycatcher to be *pusilla*.' He, it will be noted, had identified '*minimus*' as a female or young of '*pusilla*' and '*flaviventris*' as the adult male. On Jan. 7, 1842, William Baird writes: 'Mr. Audubon must be a much cleverer fellow than I supposed him to be. His present of the biography was very kind. You know I told you in the fall that the little Yellow-bellied Flycatcher answered pretty well to Richardson's plate of *Tyrannula pusilla*, but Townsend [1] said he had seen thousands of the bird on the Columbia and pronounced our little bird not to be the *pusilla*, however, I think Audubon right.'

"Spencer Baird still seemed to think one or both were new, and advocated publishing them, but William wrote on Feb. 1, 1842, strongly discouraging this idea. By June 4, 1843, however, he had come round to his brother's view and says: 'I think we had better publish as soon as possible in the Journal of the Philadelphia Academy. . . . At all events the Rocky Mountain bird and our Yellow-belly are different, one must be new and those fellows in Philadelphia (who, by the way, know little or nothing) would sooner believe the bird got out there to be *pusilla* than ours. We might for the matter of that, describe either and they would not know whether we were right or wrong.' On the strength of this the paper was written and submitted to the Philadelphia Academy, and on July 16, 1843, we have the following from Wm. Baird: 'I received a letter from Townsend. He says Cassin wrote to him about the birds we described and sent on. I suppose he wanted Townsend's opinion. Townsend wrote to him that he had no

[1] John K. Townsend, who visited the Columbia River in 1834, was now located in Washington. The bird he saw was probably *traillii*.

doubt they were new. For the mere opinion of those Philadelphians that a bird is a new species, I would not give one straw, but no doubt they may think Townsend knows so much about these birds that his word would be enough. He certainly knows more than any of them.'

"The last chapter in the history, I published in 'The Osprey, Vol. IV, p. 173. It is a letter from Cassin to Spencer Baird, July 5, 1843: 'Dear Baird: Dished! Last evening being the 4th of July the Academy of Natural Sciences of Philadelphia did not muster a quorum, the honorable members being as it would appear patriotic as well as scientific, were probably helping to celebrate the anniversary of the nation's birthday in a manner seeming to them right and proper, which was pretty enough in them, and to which I have not the slightest objection excepting that I had not the pleasure of reading to them your paper.' It was read the next week, however, and ordered printed July 25th. Audubon revised his opinion of the new species, accepted them gracefully and figured them in the appendix of Vol. VII of his 1840–44 edition of 'Birds of America.' Let us hope that Wm. Baird, in the same spirit, revised his opinion of the Philadelphia ornithologists."

I take this occasion to express my hearty thanks to Miss M. R. Audubon for the generous gift of the Baird letters, and to Miss Lucy H. Baird, who kindly furnished me with copies of Audubon's correspondence to her father, five of the letters being a direct reply to those sent by Baird. I am also indebted to Prof. O. B. Super of Dickinson College, Carlisle, Pa., for information regarding certain names and localities mentioned in the letters, and to Dr. Charles W. Richmond and Mr. Witmer Stone for assistance rendered. In Dr. Coues's Bibliography of 1878 (in 'Birds of the Colorado Valley'), in quoting the 1840–44 edition of 'Birds of America,' he writes the following, so beautifully and truthfully expressed: "If a trace of sentiment be permissible in bibliography, I should say that the completion of this splendid series of plates with the name *bairdii* was significant; the glorious Audubonian sun had set indeed, but in the dedicating of the species to 'his young friend Spencer F. Baird' the scepter was handed to one who was to wield it with a force that no other ornithologist of America has ever exercised."

These Letters are copied "verbatim, literatim, et punctuatim."

BAIRD TO AUDUBON.

Carlisle, Cumberland Co., Pa., June 4, 1840.

Dear Sir

I herewith send you the description of a species of *Tyrannula*, an account of which I have been able to find, neither in your Ornithological Biography and Synopsis, nor in Nuttall's Ornithology. I have obtained three specimens, all in low swampy thickets. Two of them I stuffed, the third (obtained last Saturday) [May 30, 1840] I have in spirits and would gladly send it to you, had I the opportunity. Their habits were very similar to those of the Little Tyrant Flycatcher. (*Muscicapa Pusilla.*) Male.

Bill large, depressed, decidedly convex in its lateral outlines, and very broad. Third quill longest. Bill dusky above, yellow beneath. Feet dark brown. Upper parts clear greenish olive. Cheeks and sides of neck of a slightly lighter tint. General color of lower parts gamboge yellow, throat slightly darker, across the breast tinged with yellowish green. Quills and tail brown. First row of smaller wing coverts tipped with yellowish white, as also are the secondary coverts. Secondary quills narrowly tipped and margined with the same. Loral space and eyelids yellowish. Outer edge of tail feathers, like the Back. Length to end of tail 5 1/2, to end of wings $3,\frac{11\,1/2}{12}$, of claws $4\frac{4\,1/2}{12}$, wing from flexure 2 6/12; tail 2; distance between end of closed wing and end of tail 1 3/12: Bill along ridge 5/12, lower mandible 7/12: Tarsus $\frac{7\,1/2}{12}$: Hind toe and claw $\frac{4\,2/3}{12}$, middle toe and claw $\frac{5\,1/2}{12}$: First quill 4/12 less than third; $\frac{3\,1/4}{12}$ less than second. Middle tail feathers $\frac{1\,1/2}{12}$ less than the outer. It differs very decidedly from the Little Tyrant Flycatcher. The color of the upper parts is of a much brighter and purer color. The white and ash of the throat, neck, and sides, is replaced by the yellow and greenish yellow. The color of the rest of the lower parts is much brighter, being a decided gamboge. The bill is much larger, and broader, being very decidedly convex in its lateral outlines. The tail also is of a darker brown.

I send you the measurement of another Flycatcher which I shot last Saturday. It was flying about from one low bush to another, in a field by the creek. I heard no note. Length to end of tail

5 3/4, of wings 4 7/12, of claws $^{3\,1/2}_{12}$: extent 9 1/2: Tail 2 $^{4\,1/2}_{12}$, wing from flexure 3 $^{2\,1/2}_{12}$: end of closed wing from end of tail 1 $^{4\,1/2}_{12}$: Second quill longest $^{4\,1/2}_{12}$ longer than the first. Middle tail feathers $^{1\,1/2}_{12}$ shorter than outer. Bill along the ridge 5/12, edge of lower mandible $^{7\,1/2}_{12}$ tarsus $^{6\,1/2}_{12}$; Hind toe and claw 4/12; middle toe and claw $^{5\,1/2}_{12}$.

This bird was a female, and resembled the Wood Pewee very much having the same large and broad bill, and pretty much the same claws. It may be a very small individual of that species.

You see Sir that I have taken (after much hesitation) the liberty of writing to you. I am but a boy, and very inexperienced, as you no doubt will observe from my description of the Flycatcher. My brother[1] last year commenced the study of our Birds, and after some months I joined him. He has gone elsewhere to settle and I am left alone. I have been much assisted however by Dr. A. Foster[2] of this place in various ways, and should the above Flycatcher happen not to have been described, it would gratify me very much to have it honored with his name. This letter is already too long, yet perhaps you will pardon me for adding a few remarks about some of the Birds found about Carlisle. And first, has not the adult male Cape May warbler a black crown? I obtained three specimens this spring, two of which agree with your description, while the third resembles the other two perfectly, except in having a perfectly black crown, as stated by Nuttal.

The Little Tyrant Flycatchers (*M. Pusilla*) were very abundant here this spring. I found them principally on low bushes and trees, in wet places, and I have seen more than a dozen in a day.

The Rough winged swallow is very abundant about here. In fact I may say to the exclusion of the Common Bank Swallow, as I have in vain this spring endeavored to get a specimen of the latter. They breed in the banks along the Letort spring.

[1] William M. Baird, born in Reading, Pa., Aug. 4, 1817, died in Reading, Oct. 19, 1872. Entered Lafayette College 1834. Graduated at Dickinson College 1837. Admitted to Berks County bar, Reading, April 12, 1844. Mayor of Reading 1855–56. Collector of Internal Revenue, 8th District of Pennsylvania, 1869–1872.

[2] Dr. Alfred Foster, M. D., born 1790, died 1847. Graduated from Dickinson College in 1809. On his tombstone in the cemetery at Carlisle, Pa., is inscribed "Purity of mind and integrity of purpose graced his great attainments in science and literature; and his character happily blended the guilelessness of childhood with the wisdom of mature years."

I procured a singular variety of the Ruby crowned Regulus this spring. It has a patch of whitish feathers on the forehead.

I have already tresspassed too much on your patience, and will conclude by saying, that if I can be of the slightest assistance to you in any way, be assured that although others may tender it more ably, yet none can more cheerfully. I am Sir, very Respectfully

Your Obedient Servant
Spencer F. Baird

J. J. Audubon. F. R. S. &c.
[Superscription] John J. Audubon. F. R. S. etc.
86 White Street,
New York.

AUDUBON TO BAIRD.

New York, June 13, 1840.

Dear Sir,

On my return home from Charleston S. C. yesterday, I found your kind favor of the 4th inst. in which you have the goodness to inform me that you have discovered a new species of fly-catcher, and which, if the bird corresponds to your description, is, indeed, likely to prove itself hitherto undescribed, for although you speak of yourself as being a youth, your style and the descriptions you have sent me prove to me that an old head may from time to time be found on young shoulders!

I wish you would send me one of the stuffed specimens as well as the one preserved in spirits, and wish you also to rest assured that if the little *Muscicapa* stands as a nondescript that I shall feel pleased to name it after your friend.

I never have seen a specimen of the male of the Cape May warbler with the upper part of the head pure black. Have you compared the *Regulus* with the description of *Regulus Cuvieri?* Could you not send me your bird to look at? Being on the eve of publishing the Quadrupeds of our Country, I have thought that you might have it in your power to procure several of the smaller species for me, and thereby assist me considerably. Please to write to me again soon, as I must resume my travels in 8 or

10 days. Have you seen a copy of the small edition of The Birds of America which I am now publishing? Believe me, dear sir,

With good wishes, your obt. sert.,

John J. Audubon.

BAIRD TO AUDUBON.

Carlisle, July 14th, 1840.

Dear Sir

I send you those birds I spoke of some time ago and would have sent them sooner had I a suitable opportunity. I write in Carlisle but I shall take the box containing them to Reading, from which place or from Pottsgrove I will send them to Philadelphia. My Grandfather and father lived at Stowe a farm about one mile from Pottsgrove, and it is my intention to spend part of the summer in visiting the scenes of my childhood. Perhaps I shall reach your farm on the Perkiomen in my rambles, and I certainly shall in that event look for the cave in the bank of that creek, should it still exist there, and will listen to the song of the Pewee[1] if audible. I yesterday prepared a quantity of arsenical soap to take along with me, in hope of being able to procure some addition to my collections.

The thrush I sent was shot last spring, and I do not recollect anything about its manners. The *Regulus* was procured on a willow over the Letort spring.[2] It was in company with many Ruby crowned individuals. I send its measurements below. I have not been able to procure any more individuals of the new? species of *Muscicapa*. The stuffed specimen I send was much injured in shooting and could not be prepared well. Will you please tell me the name of that young warbler accompanying the other birds in the box. I shot two of them together on a hickory tree; they were rather inactive and uttered only a slight "*tsee*." The shrew in the box, I found last fall lying dead on a path along the Conedogwinit creek. Please tell me its name as I cannot identify it with any of

[1] See Audubon's account of the Pewee Flycatcher nesting in the cave on his "Mill Grove" Farm. (Ornithological Biography, Vol. II, 1834, p. 122.)

[2] A small stream that rises about two miles south of Carlisle, flows through the edge of the town and falls into the Conedogwinit Creek about three miles north of the town.

Godman's [1] animals. I must now explain to you the hieroglyphics on the labels attached to the legs of the birds. The figures on the left hand of the name signify its number in order among the birds stuffed this year. The figures on the other side of the label, have reference to the date of being shot. The first fig. shows the month, the second the day of the month, and the third the year. Thus 5.8.40 signifies May 8th 1840. If you desire it I will send you a list of the birds obtained and seen about here. We have as yet not more than about 125 species, excluding some of the common birds as the Flicker, Dove, Pigeon, Ferruginous thrush etc. which we have not yet stuffed, perhaps on account of the very facility of obtaining them.

I do not know who the individual is whose name is down on your list as Spencer Baird. Some time ago I sent down to Philada. for some numbers of your work, but did not become a regular subscriber which however I would gladly do were it in my power. A Gentleman possessing a large garden near Carlisle recently told me that among the humming birds seen about his flowers, he had frequently observed one apparently green all over, and much larger than any of the others, also one with yellow on its wings. I do not know whether he is hoaxing me or not, perhaps he is, however as he gave me an invitation to come and shoot some, I shall find out. Believe me Dear Sir.

Your Obedient Servant.

Spencer F. Baird.

John J. Audubon.

Regulus — Shot April 16, 1840.

Length to end of tail 4 1/4, of Wings 3 1/2, of claws 4 1/4. Wing from flexure 2 5/16. Bill along ridge $\frac{4\,1/2}{16}$ edge of upper mandible $\frac{7\,1/3}{16}$ Tarsus Middle toe and claw $\frac{10}{16}$.

BAIRD TO AUDUBON.

Carlisle December 10th, 1840.

Dear Sir.

I take this occasion of writing to you to let you know what I have

[1] John D. Godman, author of 'American Natural History' (1st. ed. pubd. 1823), 'Rambles of a Naturalist,' etc., etc. Professor of Natural History in the Franklin Institute of Pennsylvania. Born Dec. 1794, died April, 1830.

been doing in the Bird line since I last wrote you. I was away from home all last summer and part of the fall, but when I reached Carlisle in October I set to work with redoubled zeal. It was a source of great regret to me that I was not able to meet you in Philadelphia when I was there during the latter part of September. I saw Mr. Chevalier [1] several times, and found him a very agreeable gentleman.

I have obtained a number of new species since I returned, principally ducks, hawks, owls etc. Some of them are the Scaup duck, the Shoveller, the short eared owl, the long eared owl, the great American Shrike, the Blue Grosbeak together with many others. I also have two more species, descriptions of which I cannot find anywhere. The first is a *Muscicapa*,[2] obtained Oct. 12th. Body stout, feet long & stout, 3d quill longest. Head dark brown, rest of upper parts greenish olive, lower parts sulphur yellow. Tail edged & tipped narrowly with white. Bill & feet deep black. Lateral outline of upper Mandible slightly convex. Lower mandible with the ridge very distinct. Length to end of tail 6 5/12 ext. 10 3/4. Tarsus $\frac{9\,1/2}{12}$ Bill 1/2. Tail 2 11/12.

The other bird is a very small woodpecker.[3] Has the family look of all the small woodpeckers. Strongly different from all the others. Upper part of head red, lower parts dirty yellow, with a few brown spots on the abdomen. Bill short very broad, with the three ridges of the upper mandible very distinct. Upper mandible brown, lower whitish, both mandibles with the dorsal outlines *convex*, and the bill pointed. Length 5 1/2, wing 3 1/4. If you wish it I will send a more minute description.

What do you think of the birds etc. I sent in the small box. Please to tell me the name of the shrew, and young warbler contained in it.

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[1] J. B. Chevalier. His name appears in Vols. I to V. "Birds of America," 8vo, 1840, as the Philadelphia publisher. In the latter part of his life he was unfortunate and was taken care of and provided for by Audubon and his sons up to the time of his death.

[2] The description strongly indicates *flaviventris* but the measurements of length and extent considerably exceed the average of this species.

[3] Probably *D. pubescens* in immature plumage. In the Baird Bros. 'List of Birds found in the vicinity of Carlisle, Cumberland Co., Penn.,' 1844, the species preceding *Picus pubescens* is indicated thus, "*Picus* . One specimen obtained." The bird referred to in this letter is possibly the *Picus* in the List with the specific name wanting.

I have been using every exertion to obtain quadrupeds, but with little success as yet. I however have recently secured several valuable auxiliaries from whom I expect a great deal. One of them told me that he had caught last winter a rabbit quite Brownish red.

Professor Allen [1] of our College here told me an anecdote respecting a weasel, which anecdote he had from a highly creditable source. It happened in Maine. "A weasel was introduced into a cellar for the purpose of destroying rats, which he succeeded in doing, with the exception of two or three very large ones. He finally succeeded in killing these in the following ingenious manner. He dug a hole in the ground wide at the entrance, and narrowing gradually from the entrance until it was just wide enough to allow the weasel to pop when it opened again in the air. He was then seen to run into this hole pursued by a large rat, to run out of the narrow end, and immediately to run into the other end again, and attack the rat from behind, and kill it. In this way he succeeded in exterminating the whole." He assured me the story was worthy of all credit.

A week or two ago I shot a Bay Lynx or Wild Cat a mile & a quarter from Carlisle. It was 2 1/2 feet long & weighed 12 1/2 pounds. The general color of the Pelage is of a light yellowish brown, mixed with greyish white. The former most conspicuous about the head & rump. Belly white spotted with black. Fore legs transversely banded with several black stripes inside. Fore legs barred with greyish white on a Brownish red ground outside. Tail yellowish brown above, white beneath a patch of black at the end above. Ears black at base then a triangular space of white, then margined black again. I have a much fuller description & table of measurements in my note book.

Please to let me know when you commence publishing your "Biography of Quadrupeds" etc., and on what plan it is. Expense etc. I remain.

Your Obedient Servant
Spencer F. Baird.

John J. Audubon. F. R. S.
New York
No. 86 White St.

[1] William Henry Allen, M. D., L. L. D., born March 27, 1808, died August 29, 1882. Professor at Dickinson College, Carlisle, Penn., from 1836 to 1849.

AUDUBON TO BAIRD.

New York, December 25, 1840.

My dear sir,

On my return yesterday from a tour of a month, I found your kind favor of the 10th inst. at my house. I regret exceedingly that you and I should not have met at Philadelphia, as I feel sure by the style and contents of your letters to me that you are fond of the study of natural objects, as much as I am.

I have no doubt that your journey during the last summer and autumn was a pleasing one to you, as I can well conceive from the fresh recollections of my many rambles.

You would oblige me much by sending me (through Mr. Chevalier) the *Muscicapa* you obtained Oct. 12th, and also the small woodpecker "with the very broad bill" I am anxious to see those birds, and will take especial care of them, and also return them to you, free of all expense.

I cannot at this moment return to the specimens you have already sent me, but in my next letter, I will assure you of the names of the subjects. I wish I could see your Bay Lynx, as I feel somewhat confident that we have more than two species within our limits.

Your anecdote connected with the sagacity of the Weasel[1] is quite pleasing to me, and will appear in my biographies of quadrupeds bye and bye. I cannot, as yet, give you any estimate of my work on the Quadrupeds of our Country but will do so as soon as possible. With my best wishes, for your health and prosperity, I pray you to consider me as your friend and obt. servent,

John J. Audubon.

BAIRD TO AUDUBON.

Carlisle, June 21, 1841.

Dear Sir

The spring having finally passed by and the migratory birds with it, I take the occassion to let you know the result of the labors of my brother and myself this season. As a general thing birds

[1] Reference to his work shows that the anecdote was not included in the biography of the Weasel.

of all kinds were unusually abundant this spring, nearly all having been found which have been seen at any time before. Many rare birds were found in great abundance, indeed some in such quantities as to induce the belief of Cumberland Valley being on the line of the main route in proceeding north. *Sylvicola Maritima* as usual was rather plenty. Three were shot this spring, as well as three last year. They were always found single or associated with a few individuals of *S. Blackburniæ*, *S. Icterocephala*, *S. Virens* etc., and in every situation. Orchards, Willow trees, dry rolling woods & Bottoms. *S. Blackburniæ* abounded. Some times as many as forty or fifty were seen in a day. *S. Icterocephala* was exceedingly common, indeed for two or three days, as much so as *S. Coronata*. One day at the North Mountain we must have seen four or five hundred. *S. Castanea* was not so abundant. *S. Maculosa* exceedingly abundant several days. *Trichas Philadelphia* was met with five times, two specimens, male & Female were obtained, one also last year, a female. The two Females differ considerably, both in size and in color. *Helinaia Rubricapilla* was very common. We shot six or eight in one day & could have shot more. *Helinaia Solitaria* was rather common. *H. Peregrina* was met with once. *Myiodioctes Canadensis* exceedingly common. *Myiodioctes Wilsonii* abundant, fifteen & thirty often seen in a day.

There is one flycatcher respecting which we are in doubt, and which was very abundant this spring. It is the one we had considered *M. Pusilla* but a thorough examination of the Biography, has thrown doubt on this supposition, it agrees pretty well with the *M. Acadica* of Nuttall, but not with the *Acadica* of the Synopsis. I will send you one as soon as possible that you may decide the question, as there is no set of Plates in Carlisle to which we might refer. The small yellow bellied Flycatcher which I sent you last summer, was very abundant this spring. Do you wish any more specimens? Dr. George C. Leib[1] of Philadelphia procured that same bird last year, and it was proposed I believe by the Philadelphia Ornithologists to name it *Muscicapa Leibii*, which would do very well. The thrush I sent you, was also quite common in

[1] A resident of Philadelphia, Pa. Described *Fuligula grisea* in 1840. Died prior to 1856.

the mountains around here. Mr. Nuttall indicates it in his description of *Turdus Wilsonia*, or *T. Solitarius*. We obtained two genuine *Muscicapa Traillii*, agreeing precisely with the description, as to size, color, proportion of quills etc. If you have ever been in Cumberland County you will be aware that two parallel ranges of mountains run east & west about six miles from Carlisle on each side. These appear to be the headquarters of the *Sylvicolidæ* and many others, from where they sally out into the Valley. Of course they are always found in the greatest abundance there. It was in the Northern range, called the North Mountain that we met with *Troglodytes Bewickii*. Three individuals were seen early in the spring and I saw another a few days ago near the very place where I had shot one of the others. *T. Palustris* was shot in a little pond in the South Mountain.

I was considerably surprised at meeting with a small flock of the Pine finch (*Linaria Pinus*) on the 28th of last May. The specimens obtained, (Male & Female) were very bright. Three specimens (one male & two females) of *Peucea Lincolnii* were added to our collection. Two found on apple trees in the Valley, the other on a pine near the mountain.

Fringilla Leucophrys was very abundant. One day at least sixty were seen in small flocks all over the country.

Coccoborus Cæruleus was obtained at the North Mountain, this spring. Only two were seen. — *Vireo Solitarius* was so common that dozens could have been shot in a day.

You will perhaps be surprised to learn that the South Southerly, *Fuligula glacialis* occurs in the Conedogwinit creek near this place. We obtained two specimens, male & female. The first was caught in a small Pond about three miles from town, where it had alighted & where it was unable to escape the Puddle being but three or four yards broad. The other was shot in the creek while flying past my brother. A man living near that water told us that he several times early in the spring had shot a small Black & white duck with a very long tail. May we not expect to see you in Carlisle before a great while?

It would give us very great pleasure indeed. I remain

Yours sincerely

Spencer F. Baird

I omitted to mention the case of an *Astur* which we shot on the 9th of May last. It is very like the young Male of *Astur Fuscus*, the principle difference being in size. The dimensions were as follows. Length to end of tail 16 inches, of wings 11 3/4, of claws 13 1/4, From flexure 8 1/2, extent 28. The specimen was a *Male*. There could be no mistake about the sex, as the testes were large & very apparent to the eyes of both myself and my brother. Can this be *Astur Fuscus?* The fourth quill is longest. The bird appears at least three times as large as a specimen (Male) of *Astur Fuscus*.

S. F. B.

John J. Audubon, Esq.
No. 86 White St.
New York

AUDUBON TO BAIRD.

New York, July 29, 1841.

My dear Sir,—

I have not had time to answer your interesting favor of the 21st until this morning, being now constantly engaged in the figuring, &c., of the Quadrupeds of Our Country; by which I mean that I actually work from daylight every day until I retire to my necessary repose at night.

Your observations upon the birds of passage the last spring are what they have been almost throughout the U. S. The very backward spring which we have experienced this year did no doubt retard the coming into the States the millions of passenger birds that come to us from beyond our limits. The Fly-catcher of which you are in doubt is nevertheless the *M. Pusilla*, and you must not be surprised to find *perhaps* some discrepancy between the specimens you have procured and the descriptions you may have read, as among mine these differences are quite obvious and belonging to either sex or age, as is indeed the case with most of our birds as well as among many of our quarupeds. Thus, the small yellow bellied Fly-catcher of my friend Leib is nothing else than an adult male of this species! As to the Thrush which I have of yours it is quite in the same predicament being only a Bird of 12 months old of the *Turdus mustelinus* of Wilson. I am indeed surprised that

you should have perceived the "South Southerly" about you, this is, however, no more than an accident, that you should have met with the Golden Eye is not at all strange, as that species occupies at different periods almost any stream of the Union.

I cannot at present tell you when I may have the pleasure of meeting with you at your own domicile, and yet this may happen quite unexpectedly.

Do you not pay attention to the quadrupeds around you? If not, I wish you would!—and moreover I should be highly pleased to hear of your procuring for us all such as may be found in your vicinity. You have *Bats, Wood Rats, & Mice, Weasels, &c., &c.*, all of which I should like to possess specimens at your hands. Could you not save all that you come across with in this way, place them in *common good Rum*, and forward them to me at once or as soon as you have some 2 or three species. I will most cheerfully pay all expenses to Philadelphia addressed to *J. B. Chevalier*, No. 70 Dock Street.

I am now as anxious about the publication of the Quadrupeds as I ever was in the procuring of our Birds, indeed my present interest in Zoology is altogether bent toward the Completion of this department of Natural Science.

Do please write to me often as I am always glad to hear from you, and when I am somewhat slow in answering your letters, be assured that it is altogether on a/c of the excess of Labour that I have to go through.

Believe me with sincere good wishes
Your friend and servant,
John J. Audubon.

(*To be continued.*)

AN ASTRONOMICAL DETERMINATION OF THE HEIGHTS OF BIRDS DURING NOCTURNAL MIGRATION.

BY FREDERIC W. CARPENTER.

TWENTY-FIVE years ago W. E. D. Scott, in the 'Bulletin of the Nuttall Ornithological Club,'[1] called attention to the telescope as a means for actually observing against the moon as a background the nocturnal migratory flight of birds. Realizing the possibilities of this method in throwing light on the unsettled question of elevation, Mr. Scott, with the aid of Professor Young of the Astronomical Department of Princeton University, made the following observations and calculations. A nine and one-half inch telescope was pointed toward the moon in the month of October, 1880. Numbers of birds were seen flying in a general southeasterly direction. Since these birds were clearly outlined they must have been at least one mile from the observers, for if nearer the telescope they would have been out of focus. A distance of one mile was, therefore, taken as the inferior limit of the field of observation; and on the assumption that birds would not fly at a greater height than ten thousand feet the superior limit of the field was fixed at a distance of four miles. These distances and the angle at which the telescope was inclined gave the data for the conclusion that the birds observed were flying from one-half[2] to two miles above the earth.

F. M. Chapman followed a few years later with a report in this journal[3] of observations made with a six and one-half inch telescope during a night in September, 1887. With the assistance of an astronomical friend, John Tatlock, Jr., the writer prepared a table

[1] Scott, W. E. D.,'81. Some Observations on the Migration of Birds. Bull. Nuttall Ornith. Club, Vol. VI, No. 2, pp. 97–100, 1 fig. Migration of Birds at Night. *Ibid.*, No. 3, p. 188. Note by J. A. Allen appended to each article.

[2] This lower limit is given by J. A. Allen and Newton and Gadow as one mile. In the original paper Mr. Scott makes no actual statement of the dimension, but in his figure (p. 100) the distance is represented by the perpendicular of a right triangle, having an angle of 30° opposite, and an hypotenuse one mile in length, This would make the perpendicular one-half mile long.

[3] Chapman, F. M., '88. Observations on the Nocturnal Migration of Birds. Auk, Vol. V, No. 1, pp. 37–39.

showing the probable limits of height between which the birds were flying. In so doing it was necessary to assume that the least distance from the observer at which birds could be seen was one mile, and the greatest distance five miles. The computation of the heights showed that the birds were flying between six hundred and fifteen thousand feet; and since it was evident that "the major portion passed at what may be termed the middle distance" the average height was apparently far above the inferior limit. To both observers a nearer approach to an accurate measurement of the altitude did not appear possible. Mr. Chapman wrote: "The problem of determining this height exactly is not, so far as we can now judge, capable of a definitive solution, for the reason that we have no means of ascertaining the distance of the bird from the observer."

The foregoing observations have been accepted by J. A. Allen,[1] Newton and Gadow[2] and other ornithologists as fair evidence that migrating birds fly at night at very considerable altitudes, and comment has often been made on the favorable position in which birds are thus placed for observing the prominent features of the landscape which may serve to guide them on their way. As an example of an extreme view in this connection it should be recalled that Gätke in his book entitled 'Die Vogelwarte Helgoland' gives his reasons for supposing that an altitude of thirty thousand feet or even more may be attained.

More recent attempts to measure the altitude of the migratory flight have indicated that this has been over-estimated. The methods used have, however, like former ones, involved apparently unavoidable assumptions, which, though probable, do not admit of strict verification.

The heights of migrating birds seen against the moon in September, 1896, at the Ladd Observatory, Providence, Rhode Island, were calculated by F. W. Very,[3] who compared the apparent size

[1] Notes appended to the articles by W. E. D. Scott cited above. Also review of Gätke's 'Heligoland.' Auk, 1896, Vol. XIII, No. 2, pp. 137–153.

[2] Newton, A., and Gadow, H., '93–96. A Dictionary of Birds. London, xii + 1088 pp.

[3] Very, F. W., '97. Observations of the Passage of Migrating Birds across the Lunar Disk on the Nights of September 23 and 24, 1896. Science, N. S., Vol. VI, No. 141, pp. 409–411.

of the birds with the size of prominent lunar features. Assuming the average actual length of these birds (presumably small ones) to be six inches, he was able to compute their distance from the observer and their height above the sea-level, the latter proving to be about two thousand feet. A larger bird, whose distance was determined by focal adjustment, had an altitude of only 687 feet.

In an extensive paper[1] on bird migration published in 1902, H. A. Winkenwerder gives the result of work done by himself and several collaborators in different parts of the country. At Beloit the telescope directed toward the moon's disk showed birds which were apparently following the course of a river not far from the observatory. It being taken for granted that these birds were over the river it was an easy matter to determine their approximate heights. The majority were not over fifteen hundred feet from the earth. The same conditions at Detroit gave evidence that the flight was "somewhat more than one-half mile above the surface.'

Two papers concerned with the height of birds in diurnal migration have come to my notice. In England R. A. Bray,[2] while looking at the sun through an eight-inch telescope at three P. M. on September 30, 1894, saw birds pass slowly across the field in a southerly direction. The birds came one every few seconds for a space of ten minutes. They were invisible to the unaided eye. As both the birds and the sun were in focus the former must have been, in the opinion of the writer, two or three miles away.

The height as well as the velocity of a daytime flight of ducks were accurately determined in December, 1896, by H. H. Clayton[3] at the Blue Hill Observatory, Massachusetts. This observer, assisted by S. P. Fergusson, was engaged in measuring the heights and velocities of clouds, making use of theodolites especially adapted to these purposes. The appearance of a flock of ducks flying southwest gave opportunity for applying the instruments to or-

[1] Winkenwerder, H. A., :02. The Migration of Birds with Special Reference to Nocturnal Flight. Bull. Wis. Nat. Hist. Soc., N. S., Vol. II, No. 4, pp. 177–263, pls. i–viii, 1 photo.

[2] Bray, R. A., '95. A Remarkable Flight of Birds. Nature, Vol. LII, No. 1348, p. 415.

[3] Clayton, H. H., '97. The Velocity of a Flight of Ducks Obtained by Triangulation. Science, N. S., Vol. V, No. 105, p. 26. The Height and the Velocity of the Flight of a Flock of Geese Migrating Northward. *Ibid.*, No. 119, pp. 585–586.

nithological ends. Their readings indicated that the birds were 958 feet above the ground, and were flying at the rate of 47.8 miles an hour. Under similar conditions in March of the following year the same observer ascertained that a flock of geese migrating northward was 905 feet high, and had a velocity of 44.3 miles an hour.

During the spring and autumn of 1905 Professor Joel Stebbins of the Astronomical Department of the University of Illinois and the writer made a series of observations on the nocturnal flight of migrating birds. The work was done at the Astronomical Observatory in Urbana, Illinois. Professor Stebbins became interested in the matter of determining the heights of the birds, and devised a method which we believe furnishes the solution of this problem. The entire credit for accomplishing this belongs to Professor Stebbins, who has published in the February number of 'Popular Astronomy'[1] a full account of his procedure with the mathematical data and calculations. The object of the present paper is to bring to the attention of ornithologists the results of this successful application of astronomical methods to a hitherto unsolved biological problem.

In order to obtain the necessary data for the computations two telescopes were used in making the observations. These were three-inch and four-inch equatorial instruments, placed from ten to twenty-one feet apart on a line running east and west. The magnifications were about twenty-five and thirty diameters respectively, and the powers being low objects as near as one thousand feet could be seen without difficulty. Both telescopes were directed toward the moon, and an observer stationed himself at each. Birds passing through a certain area between the telescopes and the moon could be simultaneously seen by the two observers. In the accompanying diagram this area is included by the triangle *E C D*, through which the majority of the birds flew approximately at right angles to the plane of the figure. There are also shown the two areas, *A C E* and *B D E*, in which passing birds were visible to one of the observers only. The figure has necessarily

[1] Stebbins, J., : 06. A Method of Determining the Heights of Migrating Birds. Popular Astronomy, Vol. XIV, No. 2, pp. 65–70, 2 fig. Also separate, pp. 1–6 (repaged).

been drawn out of its true proportions, the horizontal dimension being greatly exaggerated as compared with the vertical.

The eye-piece of each telescope was provided with cross-hairs which divided the field into octants, and each observer had at hand an outline drawing of the phase of the moon for the night. On this chart were drawn radiating lines corresponding to the cross hairs of the eye-pieces. The telescopes were centered on the moon's disk, the whole of which appeared in the fields of view, and each eye-piece was rotated until one of the cross-hairs was parallel with the diurnal motion of the moon. Birds which passed through the areas limited to one telescope (*A C E* or *B D E*) were merely counted by the observer who saw them, but when a bird appeared in the area covered by both telescopes (*E C D*) its course across the face of the moon was immediately marked on the charts by straight lines, and the hour was noted. The cross-hairs made it possible to locate with considerable accuracy the line described by the bird in passing before the moon's disk. These lines of flight were recorded by the observers independently, and appeared at different places on the two charts, as can readily be seen by considering the projection from *A* and *B* of any point (representing the bird) in the area *E C D* upon the line *C D*, which indicates the moon's disk. The distance between these two projections of the point will vary in accordance with variations in the vertical position of the

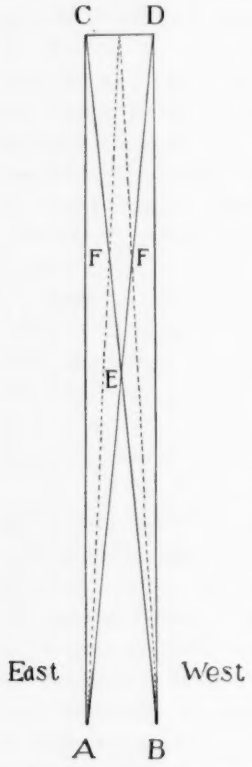

Diagram showing areas of observation. A and B, telescopes; C D, moon's disk; A C D, area of observation for telescope A; B C D, area of observation for telescope B; E C D, area in which birds were simultaneously visible through both telescopes; A C E, area in which birds were visible through telescope A only; B D E, area in which birds were visible through telescope B only.

point in question, *i. e.*, with the distance of the bird from the telescopes.

With these chart records and the necessary astronomical data Professor Stebbins was able to ascertain the "parallax" of each bird, that is, the angle at the bird subtended by the two observers, which is equal to the angular distance between the two lines of flight appearing on the chart. Using this as a basis the distance of the bird from the observers and its height above the ground were computed. The probable direction of flight was also determined, although in so doing it was necessary to assume that the flight was horizontal, as it doubtless was in the majority of cases. This assumption was not needed in calculating the heights.

The accuracy of the measurements depended on the skill of the observers in making their records and on the amount of "parallax." In Professor Stebbins's opinion the computation of the greatest height (5400 feet) involved a possible error of twenty-five per cent., while the lesser heights were probably correct within ten per cent.

Observations were made on several nights in both spring and autumn, the best success being met with on May 19–20, and October 10. On the first date 78 birds were seen during two and one-half hours, 11 by both observers, 33 by Professor Stebbins only, and 34 by the writer only. On October 10, in two hours, 57 birds were counted, 11 being visible through both telescopes: of the remainder Professor Stebbins saw 17 and the writer 29.

From nine satisfactory chart records of each night Professor Stebbins has prepared the material for the following tabular views.

TABLE I.

Birds migrating on the night of May 19–20, 1905, one day after full moon. Weather clear. Wind northwest, 4 miles an hour. Temperature at 9 P. M. 55° F.

Number of bird	1	2	3	4	5	6	7	8	9
Time of observation	10.06	10.18	10.38	11.24	11.40	12	12.09	12.24	12.33
Distance from observers in ft.	7100	4100	5600	4300	3400	4900	3100	2400	2600
Height above ground in feet	2300	1500	2200	2000	1600	2400	1500	1200	1300
Direction of flight	W N-W	W N-W	N-W	N-W	N-W	N N-E	N N-W	N-E	N-W

TABLE II.

Birds migrating on the night of October 10, 1905, three days before full moon. Weather clear. Wind west, 12 miles an hour. Temperature at 9 P. M. 48° F.

Number of bird	1	2	3	4	5	6	7	8	9
Time of observation	9.15	9.25	9.32	9.45	9.49	10.06	10.25	10.38	10.55
Distance from observers in ft.	5800	3600	2800	6700	2100	7700	5800	2100	3300
Height above ground in feet	4000	2500	1900	4700	1400	5400	4100	1400	2300
Direction of flight	S-E	S by E	S S-E	S by E	S	S S-E	S-E	S S-E	S

Table I shows that on May 19–20 no birds were one-half mile above the ground, and one was as low as 1200 feet. On October 10, however, as can be seen from Table II, a single bird was slightly over a mile high. Three others ranged between one-half and one mile, while the remaining five were below one-half mile, two being at an elevation of 1400 feet only. It should be noted that the position of the telescopes did not permit the measurement of birds which may have been lower than the point marked *E* in the diagram, which point on May 19–20 varied between 550 and 1100 feet from the ground, and on October 10 between 750 and 800 feet. As the diagram shows, the area of simultaneous observation (*E C D*) becomes narrower as the point *E* is approached, and as a consequence the chances of birds appearing therein are correspondingly decreased.

The conditions, then, were most favorable for the detection of the uppermost birds, and it seems probable that the majority were considerably below the highest records obtained. On both nights the calls of birds apparently not far overhead were frequently heard. Furthermore, Professor Stebbins has determined the upper limit of over half of those birds seen by one of the observers only on October 10, and shows that these must have been below 1600 feet. In the diagram it will be seen that the area of observation of each telescope has been divided into halves by dotted lines. If the observer at *A* saw a bird, not seen from *B*, against the right half of the moon that bird must have been in the area *A F E*.

Similarly, a bird seen from *B* only, against the left half of the moon must have been in the area *B F′ E*. On October 10 the points *F* and *F′* ranged between 1500 and 1600 feet from the ground, never being higher than the latter distance. Of the 46 birds seen by the observers separately, 24 were in the areas *A F E* and *B F′ E*, and, therefore, certainly less than 1600 feet high. The remaining 22 birds were in the areas *A C F* and *B D F′*, and the upper limit of their height could not be determined.

If observations and measurements such as those recorded above could be made at various places over the country, especially along well traveled routes of migration, the result would be an accumulation of statistics in regard to the height and direction of the migratory flight, the value of which is apparent to every ornithologist.

GENERAL NOTES.

Audubon's Shearwater and Peale's Petrel Breeding in Bermuda. — On March 4, 1906, Mr. Louis L. Mowbrey of St. George, Bermuda, took an Audubon's Shearwater (*Puffinus auduboni*) and egg on a small islet off the southeastern end of Bermuda. Another bird and egg were taken on March 11. In each instance the bird was taken on the nest, which was in a hole of the rock without moss or lining of any kind. As far as I can learn this is the most northern record for the breeding of this bird. One of these birds and an egg is now in my collection.

On Feb. 22, 1906, Mr. Louis L. Mowbrey took a Peale's Petrel (*Œstrelata gularis*) in a hole of the rock overlooking the sea and washed by the spray. The bird was taken after a southwest gale. Peale's Petrel is not included in the A. O. U. Check-List, but I am sure of the identification of the bird, and am glad to be able to put on record the first instance of Peale's Petrel being taken in the Northern Hemisphere. The bird is now in the collection of the Bermuda Natural History Society.— Thomas S. Bradlee, *Nahant, Mass.*

The Water Turkey and Tree Ducks near Tucson, Arizona.— September 12, 1893, a Water Turkey (*Anhinga anhinga*) was killed on Silver Lake, a small body of water on the Santa Cruz, about two miles south of Tucson. At that time it was the only bird of the kind I ever saw, and, so far as I know, the only one taken in the Territory. It was a female

in fine plumage and provoked much interest among local sportsmen, as nothing like it had been seen thereabouts before. It measured — length 34 inches, extent 45 inches, wing 12.25, tail 11, and bill, along the culmen, 3 inches. Last winter a farmer living in the valley a few miles below here brought me a tail feather with a crimped web. It was from a darter he had killed on one of the laguñas on the Arizona side of the river. Later I saw and counted seven of them. As they were out of gun range I did not disturb them. From what I can learn from people living near the water the bird is not uncommon in that portion of the valley.

I lived about twenty-three years in central southern Arizona and during that time I remember having seen but two Fulvous Tree Ducks (*Dendrocygna fulva*). They were brought to me from a lake near Buenos Ayres, about seventy miles southwest of Tucson. Here I find them fairly abundant during the winter months. In the spring of 1899 one was brought to me for identification. It had been killed on a small patch of water on the California desert. April 27 I counted 11 in one bunch at the mouth of the Gila. October 12 of that year I saw a lone bird on the mud flats in that same neighborhood. It was a male and was quite thin in flesh. I have a record of having seen 27 in four years. When feeding they thrust their mandibles deep in the soft mud on both sides and in front of them as they walk along.

May 5, 1899, 6 out of a bunch of 8 Autumnal Tree Ducks (*Dendrocygna autumnalis*) were killed on the Santa Cruz, south of Tucson. They were the first and only ones I ever saw in Arizona. They were beautiful things. I did not find anyone that had previously seen them in Arizona.— Herbert Brown, *Yuma, Arizona.*

An Arctic Record for the American White Pelican.— An American White Pelican (*Pelecanus erythrorhynchos*) was taken on the shores of Liverpool Bay, in the Arctic Ocean, in June or July, 1900, by an Eskimo who skinned it, removing nearly every bone in the process. The bird was secured there soon afterwards by the Rev. I. O. Stringer, now Bishop of Selkirk, who brought it to Toronto, and through the kindness of Mr. John Maughan the bird is now in my collection. Bishop Stringer tells me the bird was new to the Eskimo. Liverpool Bay is in Lat. 70°, Long. 128°. — James H. Fleming, *Toronto, Ont.*

Unusual Nesting Site of the Black Duck (*Anas obscura*).— During the past two years I had the pleasure of discovering two instances of remarkable deviation from the hitherto well known and universally recognized nesting habits of our common Black Duck (*Anas obscura*). The first instance occurred June 10, 1904, when, on a small island in the St. Lawrence River, a pair of these ducks had taken possession of an old crow's nest, and on the date of discovery had laid ten eggs. The nest was saddled on a limb of a large elm, forty-five feet from the ground. With the exception of a liberal supply of down furnished by the bird the

nest was in its original condition and so completely was it concealed by the foliage that the presence of the duck in her snug retreat would never have been suspected had she not been accidently observed flying to the tree. The difficulty I experienced in photographing the nest adds to the value of the excellent negative I secured.

April 29, 1905, I located the second nest; in this case, owing to the bareness of the trees, concealment was impossible. The duck had laid ten eggs in a last year's nest of the Red-shouldered Hawk in a basswood tree fifty feet up, and the appearance of this large bird sitting on her nest among the naked branches was truly most unique.

In the different works on American ornithology to which I have had access, none of the writers refer in any way to this phase of the bird's life, but in a book on English natural history entitled 'Lakes and Streams' by C. O. G. Napier, published in England in 1879, the writer speaks of the Mallard (*Anas boschas*) as having been found nesting "in a crow's nest at least thirty feet from the ground."

In the two cases I have cited the ducks successfully brought off their broods but by what means they conveyed them to the neighboring marsh I could not ascertain. Both nests were in trees overlooking extensive marshes and in different parts of the county being, possibly, twenty miles apart.— EDWIN BEAUPRÉ, *Kingston, Ont.*

Lesser Snow Geese in Michigan and Ontario.— In view of the few of these birds upon record, it seems advisable to announce the capture of two Lesser Snow Geese (*Chen hyperborea*) in this vicinity. The first one was taken Oct. 27, 1905, at the base of Point Pelée, by Mr. Sidney Stanlick of Leamington, Ont. The bird is an immature female in the dusky plumage and is probably a bird of the year. In plumage and measurements it appears to be typical, but the line of the culmen shows a variation due to either individual variation or else malformation. The bird had evidently been injured before Mr. Stanlick took it. It is now in the collection of Mr. Taverner, numbered 424.

The other bird was killed Nov. 5, 1905, by Mr. Frank Mather at Goose Creek, St. Clair Flats, as it passed over his blind in company with another bird which he called a "Black Brant" but which was perhaps another *Chen*. The goose is still in his possession.

We examined the bird in the taxidermy studio of Mr. L. J. Eppinger before it was mounted but, unhappily, not before it was skinned; consequently no length measurements could be taken nor the sex ascertained. Beyond all doubt, however, it is an adult male. Every effort was made to properly identify this bird, and a careful drawing was made of the bill and submitted to Dr. Louis B. Bishop who pronounced it identical with *hyperborea* specimens of his from the Dakotas. Mr. Taverner also compared the drawing with specimens in the collection of Mr. J. H. Fleming and found it to agree with specimens of *hyperborea* and quite different

from *nivalis*. Though the measurements are well up into those given for the latter in most of our manuals Dr. Bishop says they come within those of *hyperborea* as illustrated in his series. With this evidence we have no hesitancy in recording this specimen as *Chen hyperborea*.

The status of the two forms in the Middle West seems to be but little understood and exact information as to their occurrence and distinctive features is difficult to get. From all we can gather *C. h. nivalis* appears to be essentially a bird of the Atlantic Coast, and if it does occur in this section it is only as a straggler. From all the inquiries we have made it is evident that there is much to be learned in regard to these allied forms and that a closer and more careful study of them will overthrow many of the published ideas on the subject. The present specimens of *nivalis* from the Middle West should be subjected to a more careful study to settle these points.

Measurements of Specimens.

	Length.	Wing.	Tail.	Tarsus.	Culmen.	Height of bill.
St. Clair Flat bird,	—	17.75	6.5	4.25	2.2	1.4 inches
Point Pelée bird,	27.5	16	5.25	2.75	2	1.2 inches

—P. A. Taverner and B. H. Swales, *Detroit, Mich.*

The Yellow-crowned Night Heron near Toronto.—While engaged, last year, in naming and arranging the collection of Canadian birds at the Provincial Museum in this city, I found an immature Night Heron, which proved on examination to be a young "Yellow-crowned" (*Nycticorax violaceus*). Mr. John Maughan, Jr., who mounted the specimen, has kindly looked up its record, and finds that it was taken on August 15, 1898, at his father's farm near the Woodbine, Toronto. This is, I think, the first time that the bird has been taken in Ontario, though there are one or two records of its appearance in eastern Canada.—J. B. Williams, *Toronto, Ont.*

The Red Phalarope (*Crymophilus fulicarius*), **a new Bird for the Kansas List.**—A young female Red Phalarope was killed at Lake View, five miles northwest of Lawrence, Kansas, November 5, 1905, by E. E. Brown, of the University of Kansas. The bird was flushed from grass and weeds that grew in shallow water. It was the only bird of the kind seen, and, so far as I know, is the first one ever observed in the State of Kansas. As the Red Phalarope is a maritime bird, breeding on the shores of northern bodies of salt water, and spending most of its time on the ocean, its appearance in Kansas was unlooked for. The one taken must, for the present at least, be looked upon as a straggler. It may have been carried out of its usual course by a storm, or may have fallen in company with other birds that go far inland.—L. L. Dyche, *University of Kansas, Lawrence, Kan.*

The European Lapwing on Long Island, N. Y. — A European Lapwing (*Vanellus vanellus*) was shot late last fall on the grounds of Dr. Eagleton, Meccox Bay, Watermills, Long Island. The bird was in good plumage and health.— C. William Beebe, *New York Zoological Park, New York City.*

Occurrence of the Lapwing (*Vanellus vanellus*) **and the Turkey Buzzard** (*Cathartes aura*) **in Newfoundland.**— Dr. R. R. McLeod of Brookfield, Nova Scotia, has been kind enough to place at my disposal some brief notes relating to the recent capture in Newfoundland of a Lapwing (*Vanellus vanellus*) and a Turkey Buzzard (*Cathartes aura*). The data just mentioned consist (1) of extracts copied by Dr. McLeod from a manuscript letter addressed to him by "the Editor of the St. Johns [Newfoundland] 'Evening Herald,' Mr. Forneaux"; (2) of a newspaper clipping bearing neither title nor date, but with the letters "J. E. F." inscribed in pencil on the margin; (3) of a printed letter signed and dated "James P. Howley, November 27, 1905." As the "J. E. F." clipping contains several sentences closely similar in expression, as well as thought to some of those in the letter written to Dr. McLeod, I assume that the initials just quoted represent the name J. E. Forneaux and that the account to which they are appended was written by him for the St. Johns 'Herald.' The letter by Mr. Howley is printed on paper of a different quality and color. It was apparently taken from some daily newspaper and, no doubt, from one also published in Newfoundland.

Mr. Forneaux writes to Dr. McLeod that "'the wanton lapwing' was shot on the 23d of November, 1905, and the Buzzard a few weeks before. I handled the lapwing and it was in excellent condition, being quite plump and its beautiful plumage scarcely ruffled. It was killed about a mile inland from the sea-shore, making its way south, just outside the city limits. Does it not seem the 'irony of Fate' that the brave little traveller that had come so far through storm and tempest should fly right over a man behind a gun and fall a victim to his unerring aim. He was probably the only hunter in a vicinity that covers many miles of country. Both birds will be mounted and placed in the museum in charge of Mr. J. P. Howley." In his newspaper account "J. E. F." says that the locality where the Lapwing was killed is "in the vicinity of the White Hills."

Mr. Howley states that the Turkey Buzzard "was shot by Mr. Jocelyn near Renews, not far from the whale factory at Aquaforte." "Can it be possible," he asks, "that it has been attracted by the whale offal floating southward on the bosom of the Arctic current, and has it followed up the scent to locate the origin thereof?" The Lapwing, he says, was "submitted to me by Mr. Wm. Clapp, M. H. A., who shot it near Quidi Vidi." Mr. Howley thinks it "almost impossible that this bird could have come direct across the Atlantic from its European home" and he is "inclined to believe it may have been up somewhere in Greenland or Iceland," and "been driven westward by the prevalence of strong gales of easterly and northeast winds." — William Brewster, *Cambridge, Mass.*

The Black Vulture again in Eastern Massachusetts.— On the 15th of last September, 1905, I shot a Black Vulture (*Catharista atrata*) at Waltham, Mass. This is, I believe, the fifth specimen on record in Massachusetts. When first seen, at dusk, the vulture was sitting on the top of a tall dead pine tree, on the edge of some woods, about two miles north of the town. At a distance it looked somewhat like a large crow, but much more awkward; its neck seemed to be sunk forward till it stretched out between the wings. I started toward the vulture, keeping as much out of sight as possible, but it must have seen me, for it raised its head, and then flew in my direction, with long, steady flaps of its wings, and evidently more curious than frightened, for it flew close to the tree tops, and directly over my head. When the shot struck the bird, it fell heavily to the ground, but immediately spreading both wings, as if to balance itself, it ran awkwardly off through the bushes, until shot again. Although full grown, it was evidently not an old bird; the plumage was in fine condition, but had a very disagreeable odor. The outstretched wings measured fifty-eight inches from tip to tip. The specimen, mounted, is now in my collection.— J. H. Storer, Jr., *Groton, Mass.*

Exceptional Eggs of the Bald Eagle (*Haliæëtus leucocephalus*).— On April 7, 1891, I took a set of two eggs from a Bald Eagle's nest in a tall dead pine (since fallen) in Lincoln Co., Maine. On April 16, 1892, I took a set of three eggs from the same nest. Incubation had begun in the set of two and was about one third completed in the set of three. Is it possible that there was any connection between the loss of the birds' eggs in 1891 and their laying three in 1892? The nest was lined with *green* pine boughs. When I found the nest I went very close to the tree without seeing any bird, and it was not until I fired my gun over the nest that the female flew off. I did not see her again until I was half way up the tree, when both birds appeared on the scene, though at no time did they come very near me.

The eggs of the first set measure: — 3.20 × 2.27 and 3.04 × 2.21 in. Second set: — 3.02 × 2.31, 3.03 × 2.20, 2.95 × 2.19. Average for the five eggs: — 3.05 × 2.24.— B. G. Willard, *Millis, Mass.*

Richardson's Owl in Eastern Massachusetts.— A Richardson's Owl (*Nyctala tengmalmi richardsoni*), female, was shot at Hyde Park, Mass., near the railroad tracks, towards the Clarendon Hills station by Frederic Downey, November 26, 1905. It was skinned by Mr. Frank Blake Webster, of whom I purchased it. It is now in my museum.— John E. Thayer, *Lancaster, Mass.*

Great Gray Owl (*Scotiaptex cinerea*) **in Minnesota.**— Mr. Henry W. Howling, taxidermist, Minneapolis, Minn., has recently informed me that during the present season he has received eight specimens of this species for mounting. He states that this number is more than he has

received in any previous season. The dates and localities are as follows :

Anoka, Anoka Co., Minn., Nov. 21, 1905.
St. Paul, Ramsey Co., Minn., Dec. 11, 1905.
International Falls, Itaska Co., Minn., Dec. 18, 1905.
Duluth, St. Louis Co., Minn., Jan. 3, 1906.
Lake Minnetonka, Hennepin Co., Minn., Jan. 22, 1906.
New Brighton, Anoka Co., Minn., Jan. 24, 1906.
Laddie's Lake, Anoka Co., Minn., Jan. 29, 1906.
Fort Snelling, Hennepin Co., Minn., Feb. 21, 1906.

Dr. P. L. Hatch in his 'Notes on the Birds of Minnesota," 1892, writes that since 1874 he had seen very few specimens of this owl in the hands of sportsmen and taxidermists.— RUTHVEN DEANE, *Chicago Ill.*

Eggs and Nests of the Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*). — My collector, Mr. Wilmot W. Brown, found several sets of eggs of the Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*) while collecting in Chihuahua. As these are among the first, if not the first eggs of this bird, that have been found it may be interesting to record them.

The following are his notes: —

No. 2. Colonia Pachaco, Chihuahua, Aug. 11, 1905. I found the eggs in a deserted nest of an Imperial Woodpecker in a high dead pine about eighty feet from the ground. There were two eggs in the hole on the bare wood. The hole was two feet deep and about eight inches across — the entrance was six inches in diameter. The tree was about one hundred feet high and was thirty-six inches in diameter at the base and was so dry that the bark had all peeled off. It was very difficult to climb, not to mention the danger. I took both parent birds. The tree was located on a flat-topped mountain at an altitude of 7500 feet above the sea. The measurements of these eggs are as follows: 1.64 × 1.20, 1.59 × 1.20 inches.

No. 3. Near Pachaco, Chihuahua, Aug. 14, 1905. Nest about sixty feet from the ground in a dead pine tree. Hole about two feet deep and eight inches across. Sawdust like material in bottom of hole on which the eggs rested. Eggs two, quite fresh. Altitude, 7000 feet. Measurements, 1.54 × 1.22, 1.51 × 1.19.

No. 4. Near Pachaco, Chihuahua, Aug. 15, 1905. Nest in a dry dead pine tree about seventy feet from ground. Hole seven inches in diameter at entrance and nine inches across inside, and about eighteen inches deep. The nest contained one egg in an advanced state of incubation—about ready to hatch. It rested on sawdust like material. Altitude, 7000 feet. Measurements, 1.52 × 1.15.

No. 5. Colonia Pachaco, Chihuahua, Aug. 17, 1905. Nest in a dry dead pine tree about sixty feet from ground. It contained one young one and one egg about ready to hatch. The hole was two feet deep, eight inches wide inside, and the entrance was nearly round and about six inches across. Altitude about 6500 feet. Measurements, 1.49 × 1.22.

No. 6. Near Colonia Garcia, Chihuahua, Aug. 20, 1905. Nest in a live, long-leafed pine tree about seventy-five feet from the ground. This tree had been hit by lightning on the north side leaving a dead streak and in this the hole had been made. The hole was about two feet deep and nine inches across inside. The entrance was circular in shape. The bottom of the hole contained the usual sawdust like material. The nest contained two *big* young ones and one *fresh* egg. Altitude, 7500 feet. Measurements, 1.48 × 1.18.

No. 7. Near Colonia Garcia, Chihuahua, Aug. 22, 1905. One *fresh* egg and two big young ones. Nest in a dry dead pine about fifty feet from ground; a few feathers and the usual sawdust like material in bottom of hole. Hole at entrance about six inches across and circular in shape. Depth about the same as others. Altitude, 7000 feet. Measurements, 1.60 × 1.21.

No. 8. Near Colonia Garcia, Chihuahua, Aug. 24, 1905. Nest in a rotten pine tree about fifty feet from the ground. Hole about nine inches across inside and two feet deep. Entrance six inches across and circular in shape. A few feathers and the usual sawdust like material in bottom of hole. Parrot flew at me when I was taking the eggs. One egg quite fresh, the other advanced in incubation. Tree about seventy-five feet high. Measurements, 1.51 × 1.21, 1.50 × 1.16.

No. 9. Near Colonia Garcia, Chihuahua, Aug. 25, 1905. Nest in an old rotten pine about fifty feet from ground. Hole about ten inches across inside and about twenty-eight inches deep, with the usual sawdust like deposit at the bottom. Both eggs advanced in incubation. The female was very tame, allowing me to get quite close to her. Measurements, 1.54 × 1.23, 1.53 × 1.22.

No. 10. Near Colonia Garcia, Chihuahua, Aug. 28, 1905. Two young ones [1] taken from nest in high dry pine fifty feet from the ground. Hole eight inches across inside and about two feet deep; entrance about six inches in diameter. The remains of two eggs were found. The female remained in the tree until I got quite close to the nest. Young ones in alcohol.

Remarks: One to three eggs seems to constitute a set. They are in color a glossy white. The shell is very thick for the size of the egg.

The average measurement of the twelve eggs taken by Mr. Brown is 1.53 × 1.19 inches. — JOHN E. THAYER, *Lancaster, Mass.*

Chætura vauxi: A Correction.— The name now stands in the A. O. U. Check-List, 2d Edition, "*Chætura vauxii* (Towns.)," and the authority is given as "*Cypselus vauxii* Towns., Journ. Ac. Nat. Sci. Phila., VIII, 1839, 148."

Townsend did describe the species in the connection cited, and expected

[1] These young ones are in my collection, also a section of the tree where the nest was.

it to be the original publication, but before the Academy paper got into print his 'Narrative' appeared. In the appendix to this 'Narrative,' many of Townsend's original descriptions appear, and among them that of "*Cypcelus vauxi.*" That the publication of the Narrative was really prior to that of the Journal of the Academy of Natural Sciences of Philadelphia, Vol. VIII, is evidenced by page 159 of the latter volume where Townsend himself says (in speaking of "*Sylvia tolmæi*"): "I ventured to insert a description of this bird in an appendix to my recently published work, 'Narrative, etc.'"

No. 424 of the Check-List should therefore stand: *Chætura vauxi* (Towns.), and the authority: *Cypcelus vauxi* Towns., Narrative, 1839, 348.

The authority as now given in the Check-List is further incorrect in that it cites "*Cypselus vauxii,*" where "*Cypcelus vauxii*" appeared.— W. Leon Dawson, *Seattle, Wash.*

The Eastern Distribution of the Prairie Horned Lark: A Question of Evidence. — In view of the data we possess to-day such a question would seem irrelevant, were it not a fact that recent works of importance reiterate the old dogma that this bird of the western prairies is rapidly pushing its way eastward.

It is true that our knowledge of its distribution has been worked out from West to East in a "back-handed fashion," as has been well shown by various data, and by several tabulations, part of which have aimed to prove the foregoing assumption.

First named in 1884 by Mr. H. W. Henshaw from a type selected from Illinois specimens, it has been rather slowly identified until we now have a fair knowledge of its distribution.

It is especially noticeable that as soon as attention was called to it, it appeared in various quarters where it had been confounded with its larger eastern relative, *Otocoris alpestris*, and had actually been collected on the Massachusetts coast a year before it was distinguished as a well marked race. Yet its history began much earlier. In 1833 Audubon discovered it at Bras d'Or, Labrador, and about a year later figured it in the 'Birds of America,' II, pl. CC, fl., and in the second volume of the 'Ornithological Biography' (1834), page 575, he described it as the nuptial plumage of the Common Horned Lark.

Another early record of it is to be found in Maynard's 'Naturalist's Guide,' where in 1870 it was published as having been seen in July, 1869, in Eastern Massachusetts. This record is re-cited in Coues, 'Birds of the Northwest' (p. 38, 1874).

The working out of its distribution in Maine (where it is the first migrant to appear in spring, and one of the first birds to breed), is certainly the result, in no small measure, of anticipation and careful search, and in no less measure, to opportunity, and it seems very probable that the same

is true of the greater part of its somewhat recently discovered range. In addition to the foregoing evidence, the rediscovery of the bird in Labrador in 1891 by the Bowdoin College expedition (Proc. Portland Soc. Nat. Hist., II, p. 153), after a lapse of fifty-eight years, shows conclusively that it has not suddenly extended its range eastwardly.— ARTHUR H. NORTON, *Mus. Nat. Hist., Portland, Me.*

The Seaside Sparrow Nesting in Bushes.— While I am unable to say positively that the Seaside Sparrow breeding here never nests on the ground, the few nests I have seen have all been in bushes and trees from two to six feet up. This bird is so rare here during the breeding season, and the few skins taken then are in such badly worn plumage, it is impossible to say positively what they are, but I am quite sure they are *Ammodramus maritimus macgillivraii*.

The first nest I saw that I am positive about was found on a small island on the river bank in a salt marsh east of St. Marys, the first part of June, 1904. This island is covered with a growth of sea myrtle bushes and small cedar trees. The nest was in one of the sea myrtle bushes, about three feet from ground, was rather loosely made of dry marsh grasses, and contained three eggs. The bird was incubating at the time and I had a good look at her. A few days after this the nest and eggs were destroyed by negro boys.

A few days later the birds (I presume the same pair) built another nest about thirty feet from the first, this time out on a cedar limb about six feet from the ground. On June 21, 1904, I first killed the two birds and then took the nest with the set of two eggs, and have them all now in my collection. Incubation was well under way.

The only other nest I have been able to find was an old one, possibly of the season before. It was also in sea myrtle bushes, about two feet from ground. I have looked for nests in many other marshes here but all in vain. In 1905 I did not even see a bird during the breeding season.— ISAAC F. ARNOW, *St. Marys, Ga.*

Occurrence of Progne chalybea in Texas.— In the George B. Sennett collection, recently acquired by this Museum, are two specimens of *Progne* from southern Texas which have hitherto passed as *P. subis*. Reidentification of these birds proves them to be *Progne chalybea*, the Gray-breasted Martin. This species has previously been recorded from Victoria, Tamaulipas, and Sabinas, Coahuila, in eastern Mexico, but never before from as far north as the adjoining State of Texas. The two localities given below are on the north side of the lower Rio Grande. The data are as follows: No. 84806, Am. Mus. Nat. Hist., ♂; Rio Grande City, Texas, April 25, 1880; M. A. Frazar. No. 84808, Am. Mus. Nat. Hist., ♀; Hidalgo, Texas, May 18, 1889; J. A. Singley.

Judging by these records the Gray-breasted Martin is probably of regular occurrence in the lower Rio Grande Valley. Its close resemblance to

the females and young males of *P. subis* is doubtless responsible for its having been so long overlooked.

It may be well to note that there is also in the collection an immature male *P. subis* taken at the same time and place and by the same collector as the female *chalybea*.— W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Swainson's Warbler in Nebraska.— Among a lot of bird skins from Kearney, Nebraska, sent to me for identification a few days ago, I found a fine adult specimen of Swainson's Warbler (*Helinaia swainsonii*), labeled "♂ Kearney, Neb., Apr. 9, 1905. C. A. Black." I at once wrote my friend Mr. Black, for any particulars regarding its capture, and he replied as follows: "The [Swainson's] Warbler was taken by myself, on a cloudy afternoon in my dooryard. It was hopping around on the ground under some cedar and maple trees." This I believe to be the first record of this species being taken in Nebraska, and I believe it is farther north and west than it has ever been recorded before.— CHAS. K. WORTHEN, *Warsaw, Ills.*

The Date of Discovery of Swainson's Warbler (*Helinaia swainsonii*). — In Audubon's 'Birds of America,' Vol. II, p. 84, he states concerning this species: "The bird represented in the plate before you was discovered by my friend John Bachman, near Charleston in South Carolina, while I was in another part of our continent, searching for the knowledge necessary to render my ornithological biographies as interesting as possible to you: — it was in the spring of 1832, when I was rambling over the rugged country of Labrador, that my southern friend found the first specimen of this bird, near the banks of the Edista river."

In referring to Bachman's Warbler (*Helminthophila bachmani*), Vol. II, p. 93, Audubon says: "The first obtained was found by him [Bachman] a few miles from Charleston, in South Carolina, in July 1833, while I was rambling over the crags of Labrador."

As Audubon unquestionably visited Labrador in 1833, it will be clearly seen that Swainson's Warbler was taken the same year, and *not* in 1832 as stated by him. Dr. Bachman therefore discovered two Warblers new to science in 1833, which were afterwards lost to science for more than half a century.— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Maryland Yellowthroat and Bachman's Finch near Camden, South Carolina, in Winter.— On January 8, 1906, I took a male Maryland Yellowthroat (*Geothlypis trichas*) in a little patch of briars and reeds at the side of a road, not far from a small swamp, near Camden, Kershaw County, South Carolina. The bird attracted my attention by frequently uttering its familiar call note. I will not in the field express an opinion upon its varietal status. It has been sent to the United States National Museum where it will no doubt be permanently in evidence.[1] This is the

[1] Since writing the above Mr. Ridgway has informed me that the specimen is "a typical example of *G. t. ignota*."

only Maryland Yellowthroat I have found near Camden during three winters of field work there. In 1904 the first of the season was seen on March 14. In 1905 the first was seen on March 20.

On January 25, 1906, I flushed a male Bachman's Finch (*Peucæa æstivalis bachmanii*) in a small grassy field, about thirty yards from a mixed wood of pine and oak, near Camden, and secured it. This also is the first winter example of its kind which I have found near Camden, and it has also been sent to the United States National Museum. On February 23, 1906, I secured another male specimen in a briar thicket bordering a ditch in an open field, my attention having been attracted to it by its call note. It is possible that this February bird should be considered a spring arrival, since spring begins in South Carolina in February.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Proper Generic Name for the Nightingale.— Since the propriety of our change of the generic name of the Nightingale from *Aëdon* to *Luscinia* (Proc. U. S. Nat. Mus. XXVIII, 1905, p. 895) has been recently questioned (Sclater, Bull. Brit. Ornith. Club, XVI, December, 1905, pp. 39–41), it may be well to set forth in more detail than before was thought necessary the reason for this action. The generic names *Aëdon* Forster (Synopt. Cat. Brit. Birds, 1817, p. 53) and *Luscinia* Forster (*ibid.*, p. 14) are of identical applicability, both being without diagnosis, and having for type the same species — *Luscinia megarhynchos* Brehm. As *Luscinia* occurs thus some 39 pages anterior to *Aëdon* it should be adopted. Whether or not Forster intended to credit the name *Luscinia* to Leach makes no difference at all in the necessity for its acceptance, provided it is a valid name, that it is the earliest name for the genus, and that this 'Catalogue' is its first place of publication. Forster, however, did intend it for a new name of his own, as may easily be seen by a careful examination of his introduction and text. In the former he makes the following remarks, italics ours: "That [arrangement] of Latham, and others, founded on the Linnæan system, seems preferable, if we consider the infinite approximations of the genera to each other; and the wholly artificial nature of generic arrangement: while the catalogue of Dr. Leach is certainly more conformable to the differences of the character of Birds, and also to the notions of the Antients. In those few instances where he has appeared to me to have mistaken the old name, *I have ventured to substitute one* which I believe to belong antiently to the bird. So that in the following Catalogue, the large capitals will designate the Linnæan name according to the arrangement now adopted. The small Roman letter will mark the names of the old writers brought to light by Dr. Leach. *Where I have altered them, I have put a ?.*"

The Nightingale is introduced into the succeeding Catalogue (page 14) as follows:

101 SYLVIA LVSCINIA. Luscinia Aedon?
Nightingale, Le Rosignol, Nachtigall, *or Philomela.*

The mark of interrogation clearly indicates, therefore, Forster's intention to propose *Luscinia aedon* as a new name for the *Sylvia luscinia* of Latham, and *Luscinia* as a generic term consequently must date from this place.

The generic name *Philomela* Link (Beschr. Natur. Samml. Univers. Rostock, I, 1806, p. 31) which Doctor Sclater (*loc. cit.*, p. 40) has proposed to use for the nightingale is merely a substitute for the *Sylvia* of Bechstein and therefore identical in application, whatever species may have been included. Its author gives this reason for its introduction: "Ich habe den unbequemen Namen Sylvia, welchen Bechstein dieser Gattung gegeben, in Philomela verwandelt." The species that Link enumerates under *Philomela* indicate that he had in mind the group called *Sylvia* by Bechstein in the latter's 'Ornithologisches Taschenbuch von und für Deutschland,' 1803, pp. 165–191, which name he apparently thought originated with Bechstein; and consequently the type of *Philomela* Link must be ascertained by determining the type of *Sylvia* Bechstein. Bechstein (*loc. cit.*) divides his heterogeneous group *Sylvia* into three sections, for the first two of which he gives new subgeneric names, leaving the last one as typical *Sylvia*, from which, of course, the type of the whole genus must be selected. These divisions are:

a. Grasmücken (*Curruca*) [p. 165].
b. Laubvögel (*Asilus*) [p. 173].
c. Wurmfresser [p. 177].

The first (*Curruca*) includes the nightingale, but by tautonomy has for its type *Motacilla curruca* Linnæus, from which Bechstein evidently took the name; the type of the second (*Asilus*) is commonly considered to be *Motacilla sibillatrix* Bechstein; and of the third, or typical *Sylvia* (Bechstein), the first species, *Motacilla rubecula* Linnæus, may be fixed as the type. By this arrangement *Motacilla rubecula* Linnæus becomes the type of *Philomela* Link which therefore falls as a synonym of the prior *Erithacus* Cuvier (Leç. Anat. Comp., I, 1800, tab. ii) based on the same species. Since this disposes of the generic name *Philomela*, in so far at least as the nightingale is concerned, the latter must be called *Luscinia* as above shown. — Harry C. Oberholser, *Washington, D. C.*

Winter Record for the Robin in Hanover, N. H.— January 24, 1906, following a week's thaw and exceptionally warm weather for the season, two Robins (*Merula migratoria*) appeared in the trees about the college campus. Both seemed to be males, one of them uttering a few song notes. They were not seen again. The presence of Robins in this region in winter is so unusual that their occurrence is worthy of record.— Francis G. Blake, *Hanover, N. H.*

Questionable Records.— In 'The Auk' for October, 1905, pages 410 and 419, Mr. Arthur T. Wayne published records of two birds from south-

ern California which I believe to be erroneous. As recorded these were "The California Partridge (*Callipepla californica*)," and "The Black-fronted Warbler (*Dendroica auduboni nigrifrons*)," each based on a single specimen from Los Angeles County. As Mr. Wayne definitely stated, these were of Mr. Harry S. Swarth's collecting. Since the locality in both instances was far out of the normal range, and knowing the painstaking care with which Mr. Swarth had worked over his material (I could not believe that Mr. Swarth would let such things slip through his hands unnoticed), I will confess that my suspicions were distinctly aroused. So I at once wrote to Mr. Wayne asking for the privilege of examining the skins in question in order to make sure in my own mind of the determinations. That was in October. February 23, 1906, after I had been so importunate as to write a third time, I received a blunt reply ending with the statement: "The specimens that I recorded in the Oct. Auk need no verification as I believe I know as much about these birds as you do." (!) Meanwhile I had written to Mr. Swarth, and obtained the following information:

"The bird he [Wayne] records [as the 'California' Partridge] was shot on the first day of the open season, when three of us made a pretty big bag. I put up four males, the pick of about forty, if I remember rightly. It is probably an adult bird, two years old or more; sometimes there is an appreciable difference between such and a bird of the year. Anyway I don't believe it is anything but *vallicola*, born and raised in the San Fernando Valley." Let me call attention to the fact that *californica* is a race belonging to the humid coast belt of California from Monterey, or possibly San Luis Obispo, County northward, and that the vast numbers of quail examined from Los Angeles County by various ornithologists have all been *vallicola*. This quail is not possibly migratory to the extent of 200 miles. It seems to me that here is another instance of an extreme of individual variation in one race being seized upon and labelled as an example of some remotely indigenous subspecies.

Mr. Swarth writes me further: "As to the 'Black-fronted' Warbler, I sent him [Wayne] a number of male *Audubons*, the highest colored ones I could get, and of these he kept the *very finest* and returned the others.... In my note-book the measurements of his '*nigrifrons*' are down as 'length, 5.75; extent of wings, 9.37.' You can see how this compares with my Arizona specimens." I would refer Mr. Wayne to Swarth's comparison of *auduboni* and *nigrifrons*, as regards plumages and measurements, as detailed so carefully in 'Pacific Coast Avifauna,' No. 4, pages 54 and 55, and then ask if it be probable that Mr. Swarth would make such a 'break' as to label a skin of *nigrifrons*, *auduboni*. It seems to me again a case of an extraordinarily richly-colored plumage, and an unwarranted jump at conclusions.

Although I have not had the opportunity of seeing the specimens in question, I think the above evidence supports my surmise that Mr. Wayne's "*Callipepla californica*" is only an example of the ordinary *Lophortyx californica vallicola*, and that his "*Dendroica auduboni nigrifrons*" is no more than *Dendroica auduboni auduboni*, the common form of the region.

Let me emphasize that I mean no implication other than an error of judgment. We all make mistakes. I am guilty of having launched some worse ones than the above, as elsewhere acknowledged. We must all work to clarify our horde of published records, if we want to make them of service in our study of geographic distribution and variation, if our conclusions are to be sound. It is very easy to put a mistake into print, but pitiably difficult to suppress it, as many of us know who have traced quoted errors through decades of literature.— JOSEPH GRINNELL, *Pasadena, California.*

The American Scoter, Limpkin, and Ipswich Sparrow in South Carolina.— In the A. O. U. Check-List for 1895, the range of the American Scoter (*Oidemia americana*) is given as "south in winter to New Jersey, the Great Lakes, Colorado and California." Dr. Eugene Edmund Murphey has given me permission to announce the capture of a male of this species which he secured on May 7, 1903, in Bulls Bay. The specimen is in very worn plumage, so much so that many of the primaries and rectrices are skeletonized, which shows that it undoubtedly wintered here. This record makes the first for South Carolina, and according to the A. O. U. List, the first for the Atlantic coast south of New Jersey. This specimen is now in my collection.

I am also indebted to Dr. Murphey for the privilege of recording the capture of two Limpkins (*Aramus giganteus*) that were taken at Twiggs Dead River, Aiken County, South Carolina. One of them, an adult male was taken by Mr. W. H. Twiggs, October 18, 1890, and preserved by Mr. George P. Butler, of Augusta, Georgia. This specimen is now in my collection. The negroes on the plantation told Mr. Twiggs that there had been a pair of the birds, but that they had killed and eaten one a few days before. This record is a very important one, as the Limpkin has not been taken before in any part of the United States except in Florida. In 1894, I found this species breeding abundantly on the Wacissa River, Florida, which brought its range to within eighteen miles of the Georgia line. (See 'The Auk,' October, 1895, p. 366.)

On December 26, 1905, I secured a fine specimen of the Ipswich Sparrow (*Passerculus princeps*) on Long Island, South Carolina, and on January 2, 1906, I shot another on the same island. Both specimens were moulting the feathers about the pileum and auriculars. As these were the first specimens I had ever seen in their natural environment, I determined to explore Bulls Island, which is covered along almost the entire length (ten miles) with wild oats (*Zizania miliacea*), which is well adapted to the wants of this bird. On January 8, 1906, I hunted the island most thoroughly, but among the hundreds of Savanna Sparrows (*Passerculus sandwichensis savanna*) that were everywhere I could not detect a single *princeps* among them. Upon exploring a bleak and isolated spot fronting the beach (where the Savanna Sparrow was absent) I saw three *princeps* together and succeeded in securing two of them that day — the other being so

very wild that it was lost among the sand hills. In order to satisfy myself that the bird I failed to get would remain, I made another visit on February 9, to the island, and after searching for more than three hours I succeeded in flushing and finally securing it. All the specimens taken are females. The winter of 1906 has been the mildest since the winter of 1889–90, and the presence of these birds on this coast is not due to a rigorous season, but to the absence of the food supply. For previous records of the capture of this species in South Carolina by the writer, see 'The Auk,' April, 1902, p. 203.— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Tagging Migrants.— In accordance with the scheme outlined in 'The Auk,' XXI, p. 410, I have been placing aluminum tags upon the tarsus of nestling birds, and have induced others to follow my example in the work. This past spring several field workers have been using tags supplied by me and this winter the first result has been attained.

May 29 Mr. Chas. Kirkpatrick of Keota, Keokuck Co., Iowa, tagged a nest of half grown Flickers (*Colaptes auratus*) near his home. Dec. 25 Mr. J. E. Ross took No. 123 of this series at Many, Sabine Co., Louisiana. The bird was not saved but I secured the tag from the collector and have identified it as one of my issue.

This single success shows what might be expected if the work was more generally prosecuted by ornithologists in the field. The amount of labor it entails to bend bands around the legs of a brood of nestlings is insignificant in comparison with the value of the results that may be achieved if but a very small percentage of the so marked birds ever turn up again. Many of the problems of ornithology can be solved only by some such line of work. Exact data on the age of different plumages, length of life of birds, individual routes of migration and the distances traveled by individuals, are but some of the problems that must be so attacked. To avoid confusion of having several series of tags in use at once it is advisable for one person to issue them,[1] only stipulating that, at the end of the season, a list of the tags so used, the species thus marked, and the date and place, be furnished me to be kept as a matter of record, and to have the benefit of two records to guard against loss of notes through accident.— P. A. TAVERNER, *165 Oakland Ave., Detroit, Mich.*

Notes from Hancock County, Mississippi.— On January 1, 1902, a specimen of Sprague's Pipit (*Anthus spragueii*) was taken by W. B. Allison and the writer, in a low meadow cleared from the pine woods near Bay St. Louis. It was in fine plumage and good condition. Another was seen in the same place on February 11, 1902. These two are the only Mississippi records.

[1] The tags are inexpensive and I will gladly distribute them to those desirous of carrying on the work.

In my note-book I find this entry under date of Apr. 8, 1902: "....I observed an interesting thing in connection with another Waxwing, separate from this flock. On a bare branch, a few yards away, in a little swampy bottom, I noticed an attenuated object, perfectly motionless, that soon took the colors, but not the shape, of a Cedarbird. It was so very thin and elongated that I thought either that it was the dried body of a bird that had hung there for weeks, or that a particularly murderous Shrike had impaled it by the neck, and the stretching had resulted from that. But as I came very close, and got a side view, I saw that the bird was alive, but was adopting the ruse described by Chapman, in his book on bird photography, as being employed by *Ardetta exilis*. The neck was stretched straight up, the bill nearly vertical, the crest depressed; and the general appearance of the bird made it obvious that it was trying, by straightening and greatly attenuating its body, to simulate as closely as possible a dead branch. When I was about five feet away, it fluttered off with some difficulty, evidently wounded." — ANDREW ALLISON, *Ellisville, Miss.*

RECENT LITERATURE.

Ridgway on the American Families of Oligomyodian Passeres.[1] —In a paper of ten pages Mr. Ridgway reviews the taxonomic history of these groups, and gives a 'Provisional Key to the Families of Mesomyodi,' followed by a revision of the families Tyrannidæ, Pipridæ, and Cotingidæ, with the result that a dozen genera heretofore commonly placed in Tyrannidæ are now either actually removed to other families, or their closer alliance to other families is suggested. Several, as *Sirystes*, *Hylonax*, *Elainopsis*, *Tyrannulus* and *Ornithion*, are transferred to the Cotingidæ, four or five others are thought to have Formicarian affinities, and one, *Lawrencia*, is thought to agree essentially with the Vireonidæ. As the internal structure of very few of the Mesomyodian forms is known, the arrangement here proposed is necessarily tentative, being based mainly on external characters.— J. A. A.

[1] Some Observations concerning the American Families of Oligomyodian Passeres. By Robert Ridgway. Proc. Biol. Soc. Washington, Vol. XIX, pp. 7–16, Jan. 29, 1906.

Stone and Rhoads on Birds from Northeastern Lower California.[1] — A trip to the mouth of the Colorado River, made by Mr. Samuel N. Rhoads in the early part of the year 1905, in the interest of the Academy of Natural Sciences of Philadelphia, resulted in the acquisition of considerable collections of mammals and birds, which are here reported upon by Mr. Witmer Stone. The birds numbered 258 specimens, representing about 50 species. These are listed, with their localities and a transcript of Mr. Rhoads's field notes. A second annotated list of 58 species that were observed, but not collected, completes this welcome addition to our knowledge of the little known ornis of the delta region of the Rio Colorado. — J. A. A.

Thayer and Bangs on Birds from Panama.— Two papers (Nos. 2 and 3) have recently appeared relating to the results of the John E. Thayer Expedition of 1904. The first[2] relates to the mammals and birds of the Pearl Islands, Bay of Panama, collected by Mr. W. W. Brown on a second visit to these islands in March and April, 1904. Previous to Mr. Brown's first visit to these islands, in 1900, little was known of their natural history. "On his first trip to the Pearl Islands Mr. Brown secured examples of forty-two species of birds, only two of which were North American migrants. On the present expedition he took representatives of ninety-two species.... Thus the number of species of birds so far taken in the Pearl Islands is ninety-four, of which thirty-three are North American migrants, and sixty-one resident breeding birds of the islands." Of the 33 North American migrants 24 are passerine species and 9 are sandpipers and plovers.

Respecting a number of the species and subspecies there is much pertinent comment respecting their status and relationships. Of special interest are the remarks on the *Butorides virescens* group. The Pearl Island examples are found to be inseparable from the West-Indian *B. v. maculata* (Bodd.), of which the *B. v. brunnescens* of authors appears to be merely an inconstant color phase, both forms occurring in the Pearl Islands, and between which, in the Pearl Island series "there is every stage of intermediate coloring." It is further said: "After examining a very large amount of material in this connection, we are forced to place very little reliance on color as a character by which to distinguish the various species. Seasonal difference in this respect is very great, individual variation is also great, and in arid regions the bird bleaches out very fast.... The subspecies *maculata* also has a rufous phase — the so-called *B. brunnescens* — which thus far has been recorded from Cuba and the

[1] On a Collection of Birds and Mammals from the Colorado Delta, Lower California. By Witmer Stone. With Field Notes by Samuel N. Rhoads. Proc. Acad. Nat. Sci. Philadelphia, Sept., 1905, pp. 676–690. Dec. 6, 1905.

[2] The Mammals and Birds of the Pearl Islands, Bay of Panama. By John E. Thayer and Outram Bangs. Bull. Mus. Comp. Zöol., Vol. XLVI, No. 8, pp. 137–160. Sept., 1905. Birds, pp. 140–160.

Pearl Islands only. That this is merely a phase of plumage is abundantly shown by the Pearl Island series [21 specimens]." It is also suggested that *B. v. anthonyi* will prove to be merely a synonym of *B. v. frazari*.

Two subspecies are described as new, and one previously described by Mr. Bangs has been found, in the light of new material, to be untenable.

The second paper relates to the vertebrata of the Savanna of Panama,[1] — a grassy plain near the city of Panama, where Mr. Brown collected during the greater part of May, 1904, obtaining, in addition to collections of mammals, reptiles, amphibians, and fishes, 86 species of birds, of which three are described as new. The only North American migrant among them was the Alder Flycatcher (*Empidonax traillii alnorum*).

In other recent papers Mr. Bangs discusses [2] the status of *Icterus gaulanensis* Underwood, and arrives at the conclusion that it is "an example of *I. giraudii* perfectly typical in every respect except in having the black of the head extending somewhat farther back" than is usual. He also cites several species of *Ramphocelus*, each resting on a single peculiar individual, which he considers as other instances of a similar kind,— species resting merely on 'freaks' or hybrids. He, on the other hand, considers,[3] contrary to Mr. Ridgway's conclusion, that the Panama Green Honey Creeper is entitled to recognition as a subspecies (*Chlorophanes spiza exsul*), ranging from northern and western Ecuador through Panama to Chiriqui, and as distinguishable from the more northern *C. s. guatemalensis* by smaller size and shorter bill.— J. A. A.

Stone on a Collection of Birds from British East Africa.[4] — This collection was made by Mr. George L. Harrison, Jr., on a journey through Central East Africa, May 16 to November 4, 1904, and numbers 212 species, including one new to science. The annotations give the localities and dates of collecting, and the color of the irides, bill, etc., taken from the freshly killed specimens. The classification is that of Dr. Sharpe's 'Hand-List of Birds.'— J. A. A.

McGregor on Philippine Birds.— Publication No. 34 of the Bureau of Government Laboratories, Philippine Islands, contains two papers[5]

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[1] Vertebrata from the Savanna of Panama, *Ibid.*, No. 12, pp. 211–230. January, 1906. Birds, by John E. Thayer and Outram Bangs, pp. 213–224.

[2] What is *Icterus gualanensis* Underwood? By Outram Bangs. Proc. Biol. Soc. Wash., XVIII, pp. 167–170, June 29, 1905.

[3] The Name of the Panama Green Honey Creeper. By Outram Bangs. *Ibid.*, p. 186, June 29, 1905.

[4] On a Collection of Birds from British East Africa obtained by Mr. George L. Harrison, Jr. By Witmer Stone. Proc. Acad. Nat. Sci. Philadelphia, Nov., 1905, pp. 755–782. Jan. 24, 1906.

[5] I. Birds from Mindoro and small adjacent Islands; II. Notes on three rare Luzon Birds. By Richard C. McGregor. [Publication] No. 34. Bureau of Government Laboratories, Department of the Interior. 8vo, pp. 32, with 13 half-tone plates. October, 1905.

by Mr. Richard C. McGregor, the first being an annotated list of about 110 species of birds observed or collected along the Baco River in the northern part of Mindoro, during March, April, and May, 1905. Two species (*Chætura dubia, Edoliisoma elusum*) are described as new, and there are extended notes on the nesting habits of quite a number of others. There are also nominal lists of birds noted on three outlying islands (Maestre de Campo, 20 species; Semerara, 34 species, one, *Chibia worcesteri*, new; Libay, 19 species). The second paper records three rare species from Luzon, including a specimen of *Botaurus stellaris*, apparently its first record for the Philippines. The eighteen half-tone plates give a number of views of nesting sites, and of six species of birds, from skins.— J. A. A.

Riley on New American Birds.— In recent papers Mr. Riley has described a new Ground Dove [1] from Mona Island, Porto Rico, as *Columbigallina passerina exigua*, and three new birds from the Merida region of Venezuela.[2] These are *Leptasthenura montivagans*, closely related to *L. andicola* Scl.; *Haplospiza montosa*, near *H. nivaria* Bangs; and *Pheuticus uropygialis meridensis*. He has also pointed out [3] that *Turdus montanus* Lafr. is preoccupied and must be replaced by *Turdus apicalis* Hartl., the 'correct name' becoming thus *Allenia apicalis* (Hartl.), instead of *A. albiventris* (Lawr.), as Mr. Riley had previously announced.— J. A. A.

Verrill on the Birds of Dominica.[4]— This privately printed brochure of nineteen leaves, without pagination, date, or place of publication, consists of three parts, and is based on the author's observations and collections made during his residence on the island from January 1, 1904, to August 1, 1905. The author states that no species is included in his list of which he did not obtain specimens, or observe under such conditions that their identification was positive. Part I is an annotated list of 72 species previously unrecorded from the island, giving notes on their relative abundance, localities of occurrence on the island, habits, etc. Part II contains an annotated list of 16 species previously recorded from Dominica, followed by a nominal list of all the species known to occur on the island,

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[1] A New Subspecies of Ground Dove from Mona Island, Porto Rico. By J. H. Riley, Aid, Division of Birds, U. S. National Museum. Proc. U. S. Nat. Mus., Vol. XXIX, pp. 171, 172.

[2] Descriptions of three New Birds from the Merida Region of Venezuela. By J. H. Riley. Proc. Biol. Soc. Washington, Vol. XVIII, pp. 219–222. Oct. 17, 1905.

[3] On the Correct Name for the Mountain Thrush of the Lesser Antilles. By J. H. Riley. *Ibid.*, p. 185. June 29, 1905.

[4] Addition to the Avifauna of Dominica. | Notes on Species hitherto unrecorded with | Descriptions of three New Species and a | List of all birds known to occur | on the Island. | By A. Hyatt Verrill. — 8vo, ll. 19. Privately printed, without pagination, date, or place of publication. (The present copy was received Oct. 24, 1905.)

135 in number. Then follows, as a sort of supplement or third part, descriptions of a new species of hummingbird (*Thalurania belli*), a new hawk (*Buteo latissimus rivieri*), and a new subspecies of the American Redstart (*Setophaga ruticilla tropica*). The hummingbird is said to be restricted "to the higher mountains of Dominica at an elevation of more than 2000 feet above the sea," where it is locally distributed and haunts "the deepest and dampest portions of the mountain bush." The redstart is a resident form of the North American bird, from which it is said to differ in brighter colors, smaller size, and different notes and eggs.—J. A. A.

McAtee's Birds of the Vicinity of the University of Indiana.[1] — This list of 225 species, based in part on the author's observations covering four years, but mainly upon the unpublished observations of previous observers, which include "twenty sets of migration records, covering fourteen seasons, which are on file in the archives of the Biological Survey at Washington, D. C." Three previously published lists have also been utilized. The area is comprised within a five-mile radius from the campus of the Indiana University, at Bloomington, Indiana. The observations are detailed, and in the case of the commoner species, the remarks on relative abundance and seasons of occurrence are followed by tabular statements of 'migration records,' covering generally a period of three to twelve years. At the close of the list the general facts of occurrence are presented in tabular form, for convenience of reference, and the tabular matter is followed by an index of the vernacular names of the species enumerated in the list. Six species, formerly common, are recorded as extinct, namely, Prairie Hen, Wild Turkey, Passenger Pigeon, Paroquet, Ivory-billed Woodpecker, and American Raven.— J. A. A.

Contributions to Avian Anatomy.— A paper by Margaret E. Marshall[2] treats of the anatomy (excluding osteology) of *Phalænoptilus nuttalli nitidus*, and "is intended to be the first of a series" dealing with the anatomy of the Caprimulgidæ. The paper is descriptive, and is illustrated with three plates. The work was done under the direction of Dr. Thos. H. Montgomery, Jr., and forms No. 68 of 'Contributions from the Zoölogical Laboratory of the University of Texas.' Work of this character is much needed, and should receive hearty welcome.

A paper by Frederick Walton Carpenter[3] treats in great detail of the

[1] Ecological Notes on the Birds occurring within a radius of five miles of the Indiana University Campus. By Waldo Lee McAtee. With photographic illustrations by Clarence Guy Littell. Proc. Indiana Acad. Sciences, 1904, pp. 65–202, with 32 half-tone illustrations. September, 1905.

[2] A Study of the Anatomy of *Phalænoptilus*, Ridgway. By Margaret E. Marshall, Proc. Amer. Phil. Soc., Vol. XLIV, 1905, pp. 213–240, pll. iv–vi. Oct. 28, 1905.

[3] The Development of the Oculomotor Nerve, the Ciliary Ganglion, and the Aducent Nerve of the Chick. By Frederic Walton Carpenter. Bull. Mus. Comp. Zoöl., Vol. XLVIII, No. 2, pp. 141–229, pll. i–vii. January, 1896.

eye-muscle nerves and ciliary ganglion of the common chick, including the anatomy, histology, and development. The investigation appears to have been conducted with great thoroughness and minuteness of research, but the subject is too technical in its terms and methods to warrant more than general mention in the present connection. The historical side is presented with great fullness, the 'bibliography' alone occupying fourteen pages; the researches of previous authors are summarized and discussed, as regards not only these structures in birds but in the other vertebrate classes. The work was done under the guidance of Professor E. L. Mark, and forms No. 172 of the 'Contributions from the Zoölogical Laboratory of the Museum of Comparative Zoölogy at Harvard College.'—J. A. A.

Whitaker's 'The Birds of Tunisia.'—This sumptuous work,[1] in two royal octavo volumes, with numerous colored plates, is a beautiful example of bookmaking, and the contents are worthy of the setting. The number of species treated is "about 365," of which 150 are permanently resident, 90 are summer migrants, 90 are winter migrants, and 35 are of occasional or accidental occurrence. Under each are given, first, the synonymic and bibliographical references to the species as birds of Tunisia, followed by the description (in smaller type than the rest of the text), and a biographical notice of from one to several pages, as the case may require, with often remarks on the status and relationships of the forms under notice. "Most of the information," says the author, "given regarding the occurrence and life of the several species in Tunisia is first hand, and the result of personal observation during the various journeys I have made in the Regency, but in some cases I have had to rely on the information kindly supplied me by others, foremost among whom I may mention Mr. O. V. Aplin of Bloxham, Oxon, who collected for me in Tunisia between the months of January and June, 1895, and M. Blanc of Tunis." The author's own collecting expeditions in Tunisia extended over a period of about ten years; and he speaks of the country as unrivalled in climate during a large part of the year, and as delightful to visit for sport and natural history investigations. The scenery and climatic conditions are varied, richly wooded mountains and valleys, with fertile plains relieved by lakes and rivers, characterizing the northern districts, while the central region consists of undulating park-like country, broken by lower hills, giving place further south to vast semi-desert prairie-like plains. In the

[1] The | Birds of Tunisia | being a History of the Birds found in | the Regency of Tunis | By | J. I. S. Whitaker | F. Z. S., M. B. O. U., etc. | Vol. I[–II]. | London | R. H. Porter | 7, Princes Street, Cavendish Square, W. | — | 1905.— 2 vols., large 8vo. Vol. I, pp. i–xxxii+1–294, frontispiece (photogravure), 1 half-tone, 13 pll. col., and map: Vol. II, pp. i–xviii+1–410, frontispiece (photogravure). 1 half-tone, 2 pll. col., and map. Edition limited to 250 copies.

Introduction, where the country is described at length. Tunisia is considered as divisible into four distinct faunal areas: (1) the Northern, comprising that part of the Regency north of the Atlas Mountains, a well-wooded and well-watered district with an annual rainfall, in different parts, of about 18 to 40 inches; (2) the Central, consisting of several more or less elevated plateaux, less fertile and more arid, with an annual rainfall of only about 8 inches and a much higher temperature; (3) a semi-desert region adjoining to the southward, with very little rain anywhere and some parts practically rainless, a high summer temperature, and a scanty, dwarfed flora, except in the oases; (4) the Desert-region, situated still further to the southward, composed chiefly of "sandy desert or sand-dunes formed of blown sand, intermixed here and there with more solid ground," and the vegetation limited to "a few desert-plants which eke out an existence in spots where there may be a little moisture." A faunal map illustrates the boundaries of these several areas, and also shows the topographic features on a satisfactory scale.

This diversity of physical conditions naturally affects the ranges of the species, some that are abundant in one part of the country being rare or entirely absent in other parts. "Most noticeable also," says the author, "is the variation in the coloration of birds according to their more easterly or westerly habitat in this portion of North-west Africa, the tendency of species in Tunisia being to become pale, whereas in Marocco, on the contrary, the inclination is towards an intensity of colour." As long ago as 1863, Professor Newton (Ibis, 1863, p. 189) in referring to "Mr. Wallaston's admirable remarks on the effects of isolation and exposure to a stormy atmosphere upon the insect world, alludes to the effect of the latter conditions as one of the principal causes of the darkening of the plumage of birds.[1] "

The classification and nomenclature adopted are more or less in accordance with the out-of-date system employed long ago by Dresser in his 'Birds of Europe.' The author has, however, departed therefrom so far as to use trinomials for local forms, or subspecies, respecting which he says: "It would, indeed, be contrary to the advancement of science not to do so, and no true lover of Nature would wilfully close his eyes to their recognition." The plates are admirably drawn by Grönvold, and well reproduced by Mintern Brothers. Respecting the purpose of the work, the author says it "is merely intended to be a short, though I trust a faithful, history of the birds to be met with in the Regency of Tunis. It may, I hope, be of some use to ornithologists and bird-lovers generally, and in particular to those who may travel in the country of which it treats, which has proved to me for many years so 'happy a hunting ground,'

[1] Professor Newton's extended and definite reference, nearly half a century ago, to the influence of climatic conditions in modifying coloration in birds, with particular reference to certain British species, is of special historic interest.

and afforded such endless enjoyment." The author has evidently prepared this work because he felt that he had something useful to say, and for this reason it will meet with a hearty welcome.— J. A. A.

Ralfe's 'The Birds of the Isle of Man.' [1]— The Isle of Man, with a length of about thirty-two miles, and a maximum breadth of about thirteen, affords a sharply circumscribed area of much interest for a monographer of its bird life, and Mr. Ralfe has made a pleasing and instructive book upon this well-chosen subject, which the publisher has brought out in an exceedingly attractive form. The geographical position of the Island — only sixteen miles from the nearest point of the English coast — forbids the expectation of much that is novel in its bird life. The number of species recorded is 183, of which almost exactly one half nest on the island, while 75 are permanently resident.

The author writes from a life-long residence on the island and intimate familiarity with every portion of it; and in treating of its avifauna he states that he has endeavored to emphasize every bird that is "peculiar to it, or characteristic of it, *as Manx;* and to such species as have special interest (from their general rarity as British or otherwise) particular attention has been directed, and the account of their haunts and habits in Man made as complete as possible." An introduction of forty pages gives a detailed description of its topographic features, with pertinent notes on the fauna and flora; 'a history of Manx ornithology'; 'Migration in Man'; 'Manx bird names'; and a list in tabular form of all the species of birds known to have occurred on the island within the last century, with indications of their manner of occurrence, as to whether resident, migratory, or casual visitors. Two excellent large-scale maps show (1) the relation of the Isle of Man to the surrounding countries, and (2) the island itself, with contour lines and colors denoting the topographic features. The half-hundred full-page photographic plates further illustrate characteristic scenic features and the nesting places and eggs of many species of birds.

A detailed biographical account of the species as Manx birds occupies nearly three hundred pages, and contains, besides the exposition of present conditions, much valuable historic matter. Indeed, such a book as becomes in itself a historic landmark, to which future generations will refer as a standard for the comparison of later conditions with those here so faithfully chronicled. The history of the Manx Shearwater, as a bird of the Isle of Man, is traced from the time of Willughby and Ray (middle of the 17th century) to its extinction there early in the last century, apparently through the wholesale destruction of its eggs and young. This admirable monograph properly concludes with a bibliography, a transcript of the various game acts that relate to Manx birds, and an index.— J. A. A.

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[1] The Birds | of the | Isle of Man | By P. G. Ralfe | Member of the British Ornithologists Union | Edinburgh. David Douglas. 1905.— 8vo, pp. i–lv, 1–321, 2 maps, illustrated title-page, and 50 half-tone plates. 18 s. net.

Economic Ornithology.— The food of the Horned Larks forms the subject of 'Bulletin No. 23' of the Biological Survey, by Mr. W. L. McAtee.[1] After a few paragraphs on their distribution and habits, some twenty pages are devoted to an exposition of their food habits and economic relations, and several pages more to the food habits of the California Horned Larks in comparison with those from other parts of the country. The food of Horned Larks outside of California consists of about one fifth insects and four fifths vegetable matter, the latter chiefly seeds of worthless or noxious weeds. The California Horned Larks are found to be almost entirely vegetarian, subsisting largely upon wild oats and waste grain, and are thus negligible as a source of injury to crops, and of no special benefit as insect destroyers. While "the charges made by farmers that the Horned Larks eat newly sown grain are confirmed, ... the insects they eat compensate many fold for the seed grain taken." The conclusion is: "The horned lark by its services to agriculture earns a right to live, and deserves protection at the hand of man." The frontispiece, in black and white, shows a group of 'Horned Larks feeding on Amaranth,' while plate ii illustrates 'Seeds of Certain troublesome weeds eaten by Horned Larks'; the text-cuts represent various species of noxious insects these birds help to hold in check.

The economic value of the Grouse and Wild Turkeys of the United States, by the late Dr. Judd,[2] treats of the food habits of these birds, and also of the 'preservation and propagation' of the Prairie Hens and the Ruffed Grouse. They are all vegetable feeders, but also destroy many noxious insects. Except for the propensity of the Ruffed Grouse to extend its browsing proclivities to the buds of fruit trees, especially of the appletree, they are quite harmless to agriculture, and are of considerable economic value as destroyers of weed seeds and harmful insects. Their commercial and other value as game is of great importance, and has led to the extermination of a number of species over considerable portions of their former ranges, notably in the case of the Prairie Hen and Wild Turkey. The Heath Hen, which formerly ranged over Connecticut and the eastern parts of New York, New Jersey, Pennsylvania, and Virginia, is now quite extinct except on the small island of Marthas Vineyard, on the coast of Massachusetts; the Prairie Hen has disappeared over much of its former range in Ohio and Kentucky, but has greatly extended its range westward and northward into Minnesota and Manitoba. Dr. Judd advocates the restocking of portions of its former range, which he believes can be readily

[1] The Horned Larks and their Relation to Agriculture. By W. L. McAtee, Assistant, Biological Survey, U. S. Depart. of Agriculture. Biological Survey, Bulletin No. 23. Washington: Government Printing Office, 1905. 8vo, pp. 37, with 2 plates and 13 text cuts.

[2] The Grouse and Wild Turkeys of the United States, and their Economic Value. By Sylvester D. Judd, Assistant, Biological Survey, U. S. Department of Agriculture. Biological Survey, Bulletin No. 24. Washington: Government Printing Office, 1905. 8vo, pp. 55, with 2 plates.

accomplished if undertaken in the proper way. He also believes that the Ruffed Grouse may be successfully propagated in captivity.

The reports on the food habits of the various species are very full, and the paper is altogether a most valuable contribution to economic ornithology. There is a colored plate of the Ruffed Grouse (a winter scene), and a plain plate of the Sage Grouse, both drawn by Mr. Fuertes.

'Game Laws for 1905' is "a summary[1] of the game laws of the United States and Canada, that govern seasons, shipment, sale, and licenses." The legislation of 1905 is reviewed, by States and Territories, followed by a tabular statement of close seasons in each for different species of game; the 'shipment of game' is treated at length, giving a list of the game prohibited from export by each State and Territory and the exceptions under which a limited number of birds or head of large game may be exported under license; a list of game the sale of which is prohibited is also given in the same detail; and there is a tabular presentation of details respecting hunting licenses, bag limits, and export regulations. The local regulations in States where the laws vary in different townships and counties are also tabulated. The principal points are further graphically shown by the aid of a series of small maps. In this way any desired information about any State or Territory may be found at a minimum outlay of time and effort.

A glance at the maps shows that several of the Canadian Provinces, and sixteen States require residents to take out licenses for hunting, while all the Canadian Provinces and all but twelve of the States and Territories require hunting licenses of nonresidents. All of the States and Territories, except Mississippi, prohibit the export of game either wholly or at least of certain kinds. The British Provinces, and all the States and Territories except nine (all of those west of the Mississippi River except Oklahoma), prohibit the sale of protected game throughout the year. It is thus evident that the crisis in game protection is apparently safely passed, intelligent legislation having already placed a check upon the senseless slaughter that in a short time would have exterminated the game from wide areas where it now has a chance to slowly recover, at least to some extent, from the reckless depletion of former years.

Proceedings of the Delaware Valley Ornithological Club.— 'Cassinia' for 1905[2] contains the usual amount of matter, relating especially to the ornithology of Pennsylvania, New Jersey, and Delaware, including an 'abstract of the proceedings' of the Club for 1905. The first article is a biographical notice of Charles Lucian Bonaparte, by Dr. Spencer Trotter,

[1] Game Laws for 1905. A Summary of the provisions relating to Seasons, Shipment, Sale, and Licenses. By T. S. Palmer, Henry Oldys, and R. W. Williams, Jr., Assistants, Biological Survey. Farmers Bulletin No. 230. U. S. Department of Agriculture. 8vo, pp. 54, with maps, 1905.

[2] Cassinia, A Bird Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia, 1905.— 8vo, pp. 88, frontispiece, and 1 half-tone plate. Philadelphia, Pa., Feb., 1906. 50 cents.

illustrated with a portrait. Says the author, very truly, "Alexander Wilson will always hold a distinctive place as the pioneer worker in American ornithology. Audubon was the artist, the gifted painter of our bird life. Both of these men were poet and artist rather than scientist. It was Charles Lucien Bonaparte who first placed American ornithology on the firm basis of science." Mr. Cornelius Weygandt writes of the 'Summer Birds of Broadhead's Creek, Munroe Co., Pa.'; Mr. Richard F. Miller on the 'Breeding of the Florida Gallinule (*Gallinula galeata*) in Philadelphia County'; Mr. Sandford Omensetter on 'The Media Grackle Roost' (with a half-tone plate); Mr. C. J. Peck on 'The Overbrook Grackle Roost'; Mr. Witmer Stone on 'June Birds of Fulton County, Pa.'; Mr. E. Semour Woodruff on 'Summer Birds of Milford, Pike County, Pa.'; and a 'Report on the Spring Migration of 1905,' is compiled by Mr. Witmer Stone. The 'Abstract of Proceedings,' eight pages, is followed by a 'Bibliography for 1905' of the ornithological papers by the various members of the Club, wherever published; by 'Bird Club Notes,' a list of the officers and members, and the index. The officers for 1906 are: Spencer Trotter, M. D., President; William A. Shryock, Vice-President; Herbert L. Coggins, Secretary; Stewardson Brown, Treasurer.— J. A. A.

CORRESPONDENCE.

Professor Clark on 'The Feather Tracts of Swifts and Hummingbirds.'

To the Editors of 'The Auk':—

Dear Sirs:— Recently I have read with pleasure the contribution of Professor Hubert Lyman Clark to the above subject, and which appeared in the last issue of 'The Auk' (Jan., 1906, pp. 68–91). It is not my intention to present here anything which may be considered at all in the light of a full review of this article, but I do desire to point out a few of the slips Professor Clark has again been guilty of in quoting my own writings in the same field. I say again, because he seems to be particularly unfortunate in the construction he places upon my words and statements as they appear in an article I printed a good many years ago in the Journal of the Linnæan Society of London (1888) on my 'Studies of the Macrochires,' etc. The nature of these slips I undertook, and I think very successfully, to point out in 'The Condor' some time since (Vol. IV, No. 2, p. 47).

Professor Clark in his article in 'The Auk' takes great pains to make it clear to his readers when I wrote my Linnæan article on the 'Macrochires'

that in my account of the pteryloses of the swifts and hummingbirds, I made use only of "Nitzsch's figures, which are, unfortunately very inaccurate" (p. 69), and, further, that the "position" I assume "is clearly based on insufficient or unreliable evidence." Both of these statements or insinuations are utterly without foundation. In common with most writers on pterylography, I make constant reference to Nitzsch's figures, but in nearly every instance in a critical way, pointing out his deficient comparisons, oversights, and lack of elaboration of the subject. In so far as the swifts and hummingbirds go, I had ten times, or more, the amount of material before me, illustrating those two groups, that Nitzsch had when he wrote his 'Pterylographie,' and I hardly think that any one will ever charge me with not having used "the evidence." A *partial* list of my material is presented in my Linnæan article, and I have examined scores of other specimens not enumerated there. That list includes a varying number of individuals of two species of trogons; three genera of the Caprimulgidæ; various swifts, and a great many hummingbirds; and, finally, all the forms of our swallows known at the time, and two species of *Ampelis* for comparison. So far as the hummingbirds and swifts are concerned I place more reliance upon what is to be found in the cases of *freshly killed* specimens, than I do upon many alcoholics, for the reason that it too often happens in the case of the latter, that they are specimens left over that the field collector did not have the time to skin, and in a day or two throws them into alcohol. Now with the tropical hummingbirds and many other forms, this means that the early stages of dermal decomposition has set in and the feathers on the gular area, the abdomen, and elsewhere will come out and be lost. This I have had happen in the case of some swifts I collected in New Mexico, and often in the hummingbirds.

When he comes to discuss the feather tracts of the Cypseli (p. 70), Professor Clark states that "On the anterior part of the neck, close to the head, is a large and very evident apterium, one of the most characteristic features of the pterylosis." He states that I "positively" deny "the existence of this apterium in the swifts," and I would like to ask my critic where I make any such denial. The locality referred to, being on the *anterior* part of the neck in a short-necked bird like a swift can be nothing less than the gula (or the gular area or region), and I fail to find any special reference to it in my writings anywhere. What I did deny was the presence of the *nuchal apterium* in the swifts and swallows, but recognized its presence in the hummingbirds. It is certainly absent in the swallows, and personally I have never met with it in the case of a swift; but then I have only examined some forty or fifty of them for the purpose (*Chætura*, *Cypseloides*, *Cypselus*, and *Aëronautes*).

Professor Clark further states that I deny the presence of the "supraocular apteria" in the swifts (p. 90), whereas I do nothing of the kind, but simply invite attention to the fact that Nitzsch figures them for *Cypselus*, and as I did not dispute his recognition of their existence, it is fair to presume that I recognized the presence of those apteria in the *Cypseli* generally. The fact of the matter is, twenty years ago I believed that

pterylographers the world round knew of those little naked places over the tops of the eyes in swifts. Personally, I have yet to find a hummingbird wherein the skin covering the pinion is *black*, and as this communication goes to press, I have examined an excellent specimen of *Trochilus colubris*, and it possesses no such character. Everyone knows, who knows anything of the subject at all, that it is present in swifts.

R. W. Shufeldt.

6th January, 1906.

A Suggestion.

To the Editors of 'The Auk':—

Dear Sirs: — During the revision of the A. O. U. Check-List I trust that the common names will not be entirely neglected. Most of the names in the last edition are well chosen and have stood the test of time, but a few appear to be either inappropriate or else a trifle bookish. As an example of a 'bookish' name the word "partridge" may be cited. Neither ornithologists or sportsmen employ this word in the A. O. U. sense. In speaking of species of *Oreortyx*, *Lophortyx*, *Callipepla*, and *Cyrtonyx*, they, of course, use "quail." Our western members may not know that *Bonasa* is commonly called "partridge" from New England to Pennsylvania, while the same name is applied to *Colinus* in the South. Hence we have a curious confusion of terms. I wish to propose that "quail" be substituted for "partridge" in the next check-list. I have heard the objection raised that these birds are not true quail, but as they are not true *partridges*, this fact may be cheerfully overlooked.

Names which can be improved upon are such as Louisiana Tanager, Arkansas Kingbird, Arkansas Goldfinch, and possibly a few others with inappropriate geographical handles. Western Tanager has been in literature for fifteen years and is a better name. I leave the others to the tender mercies of a committee.

In California the Mountain Quail of nearly all sportsmen and bird men is *Oreortyx pictus plumiferus*, called Plumed Partridge in the Check-List. Why not change things about and call *pictus*, Harlequin or Painted Quail, and place Mountain Quail where it belongs? Geographical names are becoming more popular (and are more useful) than personal names. Hence we now frequently see Sierra Junco, instead of Thurber Junco. This commendable practice could be extended advantageously. Mr. Grinnell in describing *Parus rufescens barlowi* had to rename *neglectus*, which he called Marin Chickadee. Mr. Ridgway has unfortunately discarded this for Nicasio Chickadee — unfortunately, because Nicasio is only a very little town that is not likely to last a great while, whereas Marin County, California, covers most of the range of *neglectus*. There are other slight changes, "mere details" perhaps, but wise men tell us that only through attention to details shall we arrive at perfection.

My idea has been to make the suggestion rather than to furnish specific cases for its application.

Stanford University, Cal. Walter K. Fisher.

The English Sparrow Problem.

EDITORS OF 'THE AUK': —

Dear Sirs: — It is now 17 years since the U. S. Department of Agriculture issued an urgent appeal to the people to take effective action against the English Sparrow. I wish to find out what has been done and to obtain a fairly complete and unbiased expression of opinion from practically the whole United States and Canada. If the whole country is prepared to act in this matter, it is confidently believed that the species can be exterminated from the Continent, or from any considerable territory in which the necessary consensus of opinion exists. It is almost useless for one town or city to exterminate the sparrows, for they immediately swarm over from neighboring places; and the great fecundity of the species renders half-way measures a waste of time and effort. Several States have had bounty laws for the English sparrow and one — Michigan — has recently reënacted a bounty law. It seems clear from the enormous rate of increase and from past experience that the work must be undertaken on a higher plane than that of bounty getting, if any permanent progress is to be made.

Will you please insert the accompanying circular in your next issue, and, if possible, add a word of editorial comment.

Very truly yours,

A. H. ESTABROOK.

Circular of Inquiry with reference to the Present Status of the English Sparrow Problem in America.

1. Are you familiar with Bulletin No. 1, The English Sparrow in America, published by the Agricultural Department in 1889; and do you agree with the facts there presented and with its conclusions?

2. Is the English Sparrow present in your locality? How numerous? Are they increasing or decreasing in numbers?

3. What is being done to exterminate them? Please outline methods which you deem effective.

4. What influence have you observed the English Sparrow to have upon native birds?

5. Would public opinion in your locality favor the adoption of effective measures to exterminate this species?

6. Please state the facts and arguments, pro or con, which decide this problem in your own mind.

Everybody interested is requested to send in replies to the above questions before June 1, if possible, to the undersigned. It is proposed to gather a consensus of opinion from all parts of this Country and Canada. The data will be made public as soon as possible.

A. H. ESTABROOK,
Clark University, Worcester, Mass.

March 5, 1906.
(Newspapers please copy.)

NOTES AND NEWS.

Dr. Jean Louis Cabanis, an Honorary Fellow of the American Ornithologists' Union, died February 20, 1906, in the ninetieth year of his age. One of his earliest papers, and perhaps his most important single contribution to ornithology, appeared in 1847, entitled 'Ornithologischen Notizen' (Arch. f. Naturg., 1847, pp. 186–256, 308–352), in which he proposed a new classification of birds, which in many respects was a great improvement upon previous schemes, being based on a number of characters here for the first time given prominence. His system was soon after given fuller expression in the 'Museum Heineanum,' published in parts, beginning in 1850. He was also the author of the ornithological parts of Tschudi's 'Fauna Peruana' (1845–46), and of Schomburgk's 'Reisen in Britisch-Guiana' (1848). In 1853 he established the 'Journal für Ornithologie,' which he edited for forty years, being succeeded in this function in 1894 by his son-in-law, Dr. A. Reichenow. His ornithological papers number several hundred, and include the birds of all countries. For many years he was custodian of the zoölogical collections of the University Museum, Berlin, and general secretary of the German Ornithological Society.

Dr. Paul Leverkühn, a Corresponding Fellow of the American Ornithologists' Union, died suddenly of pneumonia at Sophia, Bulgaria, December 5, 1905, in the thirty-ninth year of his age. He was private secretary to his Royal Highness the Prince of Bulgaria, and director of his Scientific Institutions and Library. He was the author of a large number of ornithological papers, many of them bibliographical and biographical. Among the latter may be mentioned his biography of the three Naumanns in the first volume of the new edition of Naumann's 'Vögel Deutschlands,' later issued separately.

The A. O. U. Committee on Nomenclature and Classification of North American Birds held a four days' session in Washington in January last. Besides acting on many of the cases before it, and referring those left undecided to subcommittees for further investigation, it decided on the character of the proposed third edition of the Check-List, and apportioned the work of its preparation among the different members of the Committee. The Committee on Revision of the Code also held several meetings in January, and submitted a preliminary report to the Council, which, after some discussion, was referred back to the Committee for completion, with the understanding that its final report will come up for action at the meeting of the Council to be held in Washington in November next, in connection with the annual Congress of the Union.

From the 'Report of the Chief of the Division of Biological Survey for 1905,' we learn that during the year ending June 30, 1905, the field work in Texas was completed, and is being continued in New Mexico and Colorado, under the direction of Mr. Vernon Bailey, chief field naturalist. A report on the Texas work, by Mr. Bailey, has just been published, treating in detail of the life zones of the State and its mammals and reptiles, and a report on the birds, by Mr. Oberholser, is nearly completed. The biological work in the Mackenzie basin, by Mr. E. A. Preble, is also finished, and the preparation of a report thereon is well advanced. Mr. Preble "wintered at Fort Simpson, on the Upper Mackenzie, for the purpose of studying the conditions of an arctic winter and of being on the ground so as to begin investigations in the early spring. Having finished work at Fort Simpson, he descended the Mackenzie in June, visited Fort MacPherson, on the Lower Peel River, making collections here and at other points on his way southward." Explorations were also carried on in the northern Rocky Mountains of Yukon Territory, under the direction of Mr. Wilfred H. Osgood, who, with the coöperation of Mr. Charles Sheldon, of New York, made trips to the Ogilvie Range, near the Alaska boundary, and to the region about the head of the Macmillan River. Field work was also continued in California, under the immediate direction of the Chief of the Biological Survey, Dr. C. Hart Merriam.

Work in economic ornithology has been prosecuted as usual and the results, as published in various recent 'bulletins,' have already received notice in these pages. Respecting game protection, "Every effort has been made to secure the adoption of modern methods for the protection of game, to meet the numerous demands for aid and information concerning game laws and methods of enforcement, and to coöperate in every way possible with the several States and the various game-protective associations." During the year more than 100 Capercailzie were introduced for liberation on Grand Island, Mich. About 2000 other game birds were introduced for stocking covers, including pheasants, quail, partridges, ducks, etc.

During the year several additional game and bird reservations were set aside, as the Wichita Forest Reservation, in the Wichita Mountains, Oklahoma, the Stump Lake Reservation in North Dakota, and the Breton Island Reservation, off the coast of Louisiana. Various special investigations regarding the protection of game, including the migration and protection of shore birds, have been undertaken, and the results in some cases have already been published.

Work on the migration of birds is still continued as usual, including the sending out of migration schedules, and the compiling of migration records for United States birds at points in countries both south and north of the United States, and the preparation of a bulletin on the 'Distribution and Migration of North American Ducks and Geese' is well under way.